UNITED STATES
ENVIRONMENTAL PROTECTION AGENCY
REGION 8

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IN THE MATTER OF:	**AGREEMENT AND COVENANT NOT TO SUE L.C. Canyon Partners, LLC**
Davenport and Flagstaff Smelters Site	
UNDER THE AUTHORITY OF THE COMPREHENSIVE ENVIRONMENTAL RESPONSE, COMPENSATION, AND LIABILITY ACT OF 1980, 42 U.S.C. § 9601 et seq., as amended	Docket No. **CERCLA-08-2006-0004**

TABLE OF CONTENTS

I. INTRODUCTION

1. This Agreement and Covenant Not to Sue ("Agreement") is made and entered into by and between the United States on behalf of the United States Environmental Protection Agency ("EPA") and L.C. Canyon Partners, LLC ("Settling Respondent") (collectively, the "Parties").

2. This Agreement is entered into pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act of 1980, as amended ("CERCLA"), 42 U.S.C. § 9601 et seq., and the authority of the Attorney General of the United States to compromise and settle claims of the United States.

3. Settling Respondent is a limited liability company incorporated in the State of Utah with its registered office located at 215 West 100 South, Salt Lake City, Utah 84101.

4. This Agreement involves the Davenport and Flagstaff Smelters Superfund Site (the "Site"), located at the mouth of Little Cottonwood Canyon, southeast of Salt Lake City, Utah. Settling Respondent intends to develop for residential use as single-family homes a portion of the Site that is contaminated with lead, arsenic and other hazardous substances due, at least in part, to the operations of smelters at the Site in the late 1800s. The portion of the Site that Settling Respondent intends to develop is Operable Unit 3 ("OU3").

5. The Parties agree to undertake all actions required by the terms and conditions of this Agreement. The purpose of this Agreement is to settle and resolve, subject to reservations and limitations contained in Sections IV, XVI, XVII, and XVIII, the potential liability of the Settling Respondent for the Existing Contamination at the Property which may otherwise result from Settling Respondent becoming the owner of the Property.

6. The Parties agree that the Settling Respondent's entry into this Agreement, and the actions undertaken by Settling Respondent in accordance with the Agreement, do not constitute an admission of any liability by Settling Respondent.

7. The resolution of Settling Respondent's potential liability, in exchange for Settling Respondent cleaning up the Site for future use, is a substantial benefit to EPA and is in the public interest.

II. DEFINITIONS

8. Unless otherwise expressly provided herein, terms used in this Agreement which are defined in CERCLA or in regulations promulgated under CERCLA shall have the meaning assigned to them in CERCLA or in such regulations, including any amendments thereto.

a. "Agreement" shall mean this Agreement and Covenant Not to Sue.

b. "Day" shall mean a calendar day. "Working day" shall mean a day other than a Saturday, Sunday, or Federal holiday. In computing any period of time under this Agreement, where the last day would fall on a Saturday, Sunday, or Federal holiday, the period shall run until the close of business of the next working day.

c. "Effective Date" shall be the effective date of this Agreement as provided in Section XXIV of this Agreement.

d. "EPA" shall mean the United States Environmental Protection Agency and any successor departments or agencies of the United States.

e. "Existing Contamination" shall mean:

(1) any hazardous substance or pollutant or contaminant present or existing on or under the Property as of the Effective Date;

(2) any hazardous substance or pollutant or contaminant that migrated from the Property prior to the Effective Date; and

(3) any hazardous substance or pollutant or contaminant presently at the Site that migrates onto or under or from the Property after the Effective Date.

f. "Interest" shall mean interest at the rate specified for interest on investments of the Hazardous Substance Superfund established under Subchapter A of Chapter 98 of Title 26 of the U.S. Code, compounded on October 1 of each year, in accordance with 42 U.S.C. § 9607(a).

g. "Operable Unit" or "OU" shall mean portions of the Site as described in Exhibit 1. Three OUs comprise the Site:

(1) OU1, which consists of approximately 350 acres, primarily the residential portion of the Site, and is also known as the Residential Operable Unit;

(2) OU 2, which consists of approximately 50 acres, primarily non-residential including all surface and ground water at the Site, and is also known as the Non-Residential Operable Unit, and;

(3) OU 3, which consists of approximately 34 acres of undeveloped non-residential land located to the west of Little Cottonwood Canyon Road within which is situated one residential dwelling. OU3 is the portion of the Site subject to, and designated solely for the purposes of, this Agreement. OU3 was formerly a part of OU2 and is located primarily to the north of the location of the former Flagstaff Smelter, with the remnants of that smelter lying in the southern portion of OU3.

h. "Oversight Costs" shall mean all costs, including, but not limited to, direct and indirect costs, that the United States incurs in reviewing or developing plans, reports and other items pursuant to this Agreement, verifying the Work, or otherwise implementing, overseeing, or enforcing this Agreement, including but not limited to, payroll costs, contractor costs, travel costs, laboratory costs, costs incurred pursuant to Paragraph 86 (costs and attorneys fees and any monies paid to secure access, including the amount of just compensation), Paragraph 70 (emergency response) and as the result of any work takeover as set forth in Paragraph 77. "Oversight costs" shall also include all costs incurred by the United States in conjunction with the preparation and negotiation of this Agreement, the preparation of the Explanation of Significant Differences prepared for the Residential Operable Unit Record of Decision, and the preparation of the Non-Time-Critical Removal Action Memorandum (PRP-Lead), and all other costs related thereto.

i. "Paragraph" shall mean a portion of this Agreement identified by an arabic numeral or an upper case letter.

j. "Parties" shall mean the United States on behalf of EPA, and the Settling Respondent.

k. "Property" shall mean that portion of OU3 owned by Settling Respondent and containing contaminated soil above the removal action levels set forth in Exhibit 4, encompassing approximately 27 acres and more particularly described in Exhibit 1 of this Agreement.

l. "Section" shall mean a portion of this Agreement identified by a roman numeral.

m. "Settling Respondent" shall mean L.C. Canyon Partners, LLC.

n. "Site" shall mean the Davenport and Flagstaff Smelters Superfund Site, located at the mouth of Little Cottonwood Canyon, approximately 15 miles southeast of Salt Lake City and one mile east of Sandy City, and depicted generally on the map attached hereto as Exhibit 2. The Site is listed on the National Priorities List, Appendix B of the National Oil and Hazardous Substances Pollution Contingency Plan ("NCP"), Part 300 of Title 40 of the Code of Federal Regulations. The Site shall include the Property, and all areas to which hazardous substances and/or pollutants or contaminants have come to be located.

o. "Statement of Work" or "SOW" shall mean the statement of work for implementation of the Removal Action at the Site, as set forth in Exhibit 3 to this Agreement and any modifications made in accordance with this Agreement.

p. "United States" shall mean the United States of America, its departments, agencies, and instrumentalities.

q. "Waste Material" shall mean 1) any "hazardous substance" under Section 101(14) of CERCLA, 42 U.S.C. § 9601(14); 2) any pollutant or contaminant under Section 101(33) of CERCLA, 42 U.S.C. § 9601(33); and 3) any "solid waste" under Section 1004(27) of the Resource Conservation and Recovery Act, ("RCRA"), 42 U.S.C. § 6903(27).

r. "Work" shall mean all activities Settling Respondent is required to perform under this Agreement including under the SOW and the Work Plan, and under submissions approved by EPA, except those required by Section XXI (Document Retention).

s. "Work Plan" shall mean the document prepared by Settling Respondent, as set forth in Exhibit 5 to this Agreement and any modifications made in accordance with this Agreement, that describes the specific measures that the Settling Respondent must undertake to implement the Removal Action at the Site in accordance with the Statement of Work. Specifically, the Work Plan primarily consists of the excavation and off-site disposal of approximately 43,000 cubic yards of contaminated soil, including on-site treatment of contaminated soil exceeding 5 mg/L of extractable lead.

III. STATEMENT OF FACTS

9. The Site is located in Utah in the foothills of the Wasatch Mountains in a residential area at the mouth of Little Cottonwood Canyon. The former Flagstaff Smelter was located on the north side of Little Cottonwood Creek, and the former Davenport Smelter was located on the opposite side of the creek, approximately ¼ mile south of the Flagstaff Smelter. Both the Davenport and Flagstaff smelters processed lead-silver-gold bullion from ores removed from nearby mines. The smelting process involved the crushing and melting of sulfide ore in order to concentrate the desired metals. Byproducts of that process were arsenic and lead, which contaminate the Site and are hazardous substances as defined by Section 101(14) of CERCLA, 42 U.S.C. § 9601(14). Arsenic is a confirmed human carcinogen, producing tumors in the liver and renal systems, and lead is classified by EPA as a B2 carcinogen. *Chemical, Physical, and*

Biological Properties of Compounds Present at Hazardous Waste Sites: Final Report, EPA/530-SW-89-010, September, 1985.

10. The Site has been divided into three Operable Units (OUs): OU1, also known as the Residential Operable Unit; OU2, also known as the Non-Residential Operable Unit; and OU3, the portion of the Site subject to, and designated solely for the purposes of, this Agreement.

11. Various studies have been performed at the Site, documenting elevated and widespread contamination of arsenic and lead. The Site was proposed for listing on the National Priorities List ("NPL") on December 1, 2000 and was listed on the NPL on April 30, 2003.

12. Settling Respondent hired Resource Environmental Management Consultants ("REMC") to perform certain tasks concerning the Site. REMC completed a Site Characterization Report on September 22, 2004 and a Work Plan on November 15, 2005. An Explanation of Significant Differences regarding the Record of Decision for the Residential Operable Unit (OU1) was finalized on November 15, 2005, and a Non-Time-Critical Removal Action Memorandum - Enforcement Lead for OU3 was signed on November 15, 2005.

13. Settling Respondent represents, and for the purposes of this Agreement EPA relies on those representations, that Settling Respondent's involvement with the Property and the Site has been limited to the following:

a. Settling Respondent executed contracts on May 4, 2004, and amendments thereto on March 23, 2005, to purchase the Property, and approximately 22 more acres of land that Settling Respondent has determined is not contaminated, and is proceeding with preparations for the residential development that Settling Respondent has planned for the Property and a portion of the additional acreage;

b. Settling Respondent prepared a *Site Characterization Report-Little Cottonwood Canyon Property* in 2004 that describes the contaminants, contaminant concentrations, depths of contamination, location of contaminants, and estimates the volume of contaminated soil for OU3; and

c. Settling Respondent sampled the soils in OU3 for pesticide/herbicide chemicals in 2004 and presented the results in *Phase I Environmental Site Assessment.*

IV. RESPONDENT'S CERTIFICATION

14. By entering into this Agreement, the Settling Respondent certifies that to the best of its knowledge and belief it has fully and accurately disclosed to EPA all information known to Settling Respondent and all information in the possession or control of its officers, directors, managers, employees, contractors and agents which relates in any way to any Existing Contamination or any past or potential future release of hazardous substances or pollutants or contaminants at or from the Site. The Settling Respondent also certifies that to the best of its knowledge and belief it has not caused or contributed to a release or threat of release of hazardous substances or pollutants or contaminants at the Site. If the United States determines that information provided by Settling Respondent is not materially accurate and complete, the Agreement, within the sole discretion of the United States, shall be null and void and the United States reserves all rights it may have.

V. WORK TO BE PERFORMED

15. In consideration of and in exchange for the United States' Covenant Not to Sue in Section XVI herein, Settling Respondent agrees to perform the response action selected by the Non-Time-Critical Removal Action Memorandum - Enforcement Lead that is attached as Exhibit

4, and in accordance with the Statement of Work that is attached as Exhibit 3 and the Work Plan that is attached as Exhibit 5, all of which are incorporated into this Agreement. Work to be performed by Settling Respondent includes, but is not limited to, the following measures:

a. Removal of vegetation, structures, and constructed features located in the planned excavation zones;

b. Excavation and off-site disposal of contaminated soil exceeding 600 milligrams per kilogram ("mg/kg") lead and 126 mg/kg arsenic, including on-site treatment of contaminated soil exceeding 5 milligrams per liter ("mg/L") of extractable lead;

c. Establishment of an on-site staging area to treat contaminated soil exceeding 5 milligrams per liter of extractable lead prior to off-site disposal;

d. Off-site disposal in accordance with all applicable statutory and regulatory requirements, including EPA's "Off-Site Rule," 40 C.F.R. § 33.440;

e. Confirmation sampling and analysis conducted in accordance with an EPA-approved Sampling and Analysis Plan to ensure that all contaminated soil exceeding 600 mg/kg lead and 126 mg/kg arsenic have been removed; and

f. Implementation of all activities in accordance with an EPA-approved Health and Safety Plan prepared in accordance with all applicable statutory and regulatory requirements, including 29 C.F.R. Parts 1910 and 1926.

16. Settling Respondent shall provide written monthly reports to EPA no later than five (5) working days after the close of each month in which Work is performed. Each monthly

report shall contain the information specified in paragraph II.A.1.b(3) (pertaining to Monthly Removal Response Reporting) of the Statement of Work (Exhibit 3).

17. Within thirty (30) days after the completion of Work, Settling Respondent shall provide a written completion report to EPA. The completion report shall be prepared in accordance with and contain the information specified in *Close Out Procedures for National Priorities List Sites*, January 2000, EPA OSWER Directive 9320.2-09A-P, regarding remedial action reports.

18. If, after review of the written completion report required pursuant to Paragraph 17 of this Agreement, EPA determines that any portion of the Work has not been completed in accordance with this Agreement, EPA will notify Settling Respondent in writing of the activities that must be undertaken by Settling Respondent pursuant to this Agreement to complete the Work. EPA will set forth in the notice a schedule for performance of such activities consistent with the Agreement, Action Memorandum and the SOW or require the Settling Respondent to submit a schedule to EPA for approval. Settling Respondent shall perform all activities described in the notice in accordance with the specifications and schedules established therein, subject to its right to invoke the dispute resolution procedures set forth in Section XII (Dispute Resolution).

19. If EPA concludes, based on the initial or any subsequent written completion report submitted by Settling Respondent, that the Work has been performed in accordance with this Agreement, EPA will so notify the Settling Respondent in writing.

VI. DESIGNATION OF CONTRACTOR, PROJECT COORDINATOR AND ON-SCENE COORDINATOR

20. Settling Respondent shall retain one or more contractors to perform the Work and shall notify EPA, in writing, of the name(s) and qualifications of such contractor(s) within thirty (30) days of the Effective Date. Settling Respondent shall also notify EPA, in writing, of the name(s) and qualification(s) of any other contractor(s) or subcontractor(s) retained to perform the Work at least five (5) days prior to commencement of such Work. EPA retains the right to disapprove of any or all of the contractors and/or subcontractors retained by Settling Respondent. If EPA disapproves of a selected contractor, Settling Respondent shall retain a different contractor and shall notify EPA, in writing, of that contractor's name and qualifications within fifteen (15) days of EPA's disapproval.

21. Within fifteen (15) days of the Effective Date, Settling Respondent shall provide written notice to EPA of the name, address, telephone number and qualifications of its Project Coordinator for the Site. The Project Coordinator's responsibilities are to be the primary point-of-contact for the overall management, coordination, and implementation of the SOW and Work Plan which includes ensuring the cleanup, and safe transportation and disposal of hazardous wastes and substances, overseeing the work of Settling Respondent's contractors on a regular basis to ensure that contractor personnel operate equipment properly and conduct the required response as set forth in the SOW and Work Plan, and coordinating with EPA, UDEQ, and local regulatory agencies to ensure that the response action stays on schedule and that any problems are promptly reported. To the greatest extent possible, the Project Coordinator shall be present on Site or readily available while the Work is being performed. EPA retains the right to disapprove

of the designated Project Coordinator. If EPA disapproves of the designated Project Coordinator, Settling Respondent shall retain a different Project Coordinator and shall provide written notice to EPA of that person's name, address, telephone number, and qualifications within five (5) days following EPA's disapproval. Receipt by Settling Respondent's Project Coordinator of any notice or communication from EPA relating to this Agreement shall constitute receipt by Settling Respondent.

22. EPA has designated Duc Nguyen of the Emergency Response Unit of the Preparedness, Assessment and Emergency Response Program as its On-Scene Coordinator ("OSC") for the Site. The OSC's responsibilities include overseeing the Work performed by Settling Respondent at the Site. Except as otherwise provided in this Agreement, Settling Respondent shall direct all submissions required by this Agreement to the OSC at U.S. Environmental Protection Agency, Region 8, EPR-SA, 999 18th Street, Suite 300, Denver, CO 80202-2466, (303) 312-6509.

23. EPA and Settling Respondent shall have the right, subject to Paragraph 21 of this Agreement, to change their respective designated OSC or Project Coordinator. Settling Respondent shall provide written notification to EPA three (3) days before such a change is made. Such notification shall include the information specified in Paragraph 21 of this Agreement.

VII. FINANCIAL ASSURANCE

24. In order to guarantee the full and final completion of the Work, within thirty (30) days after the Effective Date, Settling Respondent shall establish and maintain financial security for the benefit of the United States in the amount of TWO MILLION THREE HUNDRED

THIRTY-NINE THOUSAND NINE HUNDRED SEVENTY-EIGHT AND 66/100 DOLLARS ($2,339,978.66) in one or more of the following forms:

a. A surety bond unconditionally guaranteeing payment and/or performance of the Work, issued by a surety company that is (i) among those listed as acceptable sureties on Federal bonds as set forth in Circular 570 of the U.S. Department of the Treasury and (ii) acceptable in all other respects to the United States.

b. One or more irrevocable letters of credit, payable to or at the direction of EPA, issued by one or more financial institution(s) (i) that have the authority to issue letters of credit, (ii) whose letter-of-credit operations are regulated and examined by a U.S. Federal or State agency, and (iii) that are acceptable in all other respects to the United States.

c. A trust fund established for the benefit of EPA, governed by terms and conditions acceptable in all respects to the United States, and administered by a trustee (i) that has the authority to act as a trustee; (ii) whose trust operations are regulated and examined by a U.S. Federal or State agency; and (iii) that is acceptable in all other respects to the United States.

25. Any and all financial assurance instruments provided pursuant to this Section shall be in form and substance satisfactory to EPA, determined in EPA's sole discretion. The financial assurance instrument(s) provided pursuant to this Section (including, without limitation, the original versions of letters of credit and other negotiable instruments issued for EPA's benefit) shall be submitted by Settling Respondent to:

Daniela Golden (8ENF-RC)
Regional Financial Assurance Specialist
U.S. Environmental Protection Agency, Region 8
999 18th Street, Suite 300
Denver, CO 80202-2466

Settling Respondent shall also provide copies of all such financial assurance instruments to the other representatives of the United States and EPA as specified in Section XXIII (Notices and Submissions).

26. In the event that EPA determines at any time that the financial assurances provided pursuant to this Section are inadequate, or in the event that Settling Respondent becomes aware of information indicating that any financial assurances provided pursuant to this Section no longer satisfy the requirements set forth herein (including, without limitation, that any third-party provider of such assurances such as a surety, trustee, and/or financial institution no longer qualifies to provide such assurances), then Settling Respondent shall, within thirty (30) days of receipt of notice of EPA's determination or, as the case may be, within thirty (30) days of becoming aware of such information, obtain and present to EPA for approval one of the other forms of financial assurance listed in Paragraph 24 of this Agreement. In addition, if at any time EPA notifies Settling Respondent that the anticipated cost of completing the Work has increased, then, within thirty (30) days of receipt of such notification, Settling Respondent shall obtain and present to EPA for approval a revised form of financial assurance (and otherwise acceptable under this Section) that reflects such cost increase. Settling Respondent's inability to post financial assurance for completion of the Work shall in no way excuse performance of any other requirement of this Agreement, including, without limitation, Settling Respondent's obligation to complete the Work in strict accordance with the terms hereof.

27. Any and all financial assurance instruments provided pursuant to this Section shall provide EPA with immediate access to resources, whether in cash or in kind, to continue and complete the Work in the event EPA determines that Settling Respondent (i) has ceased implementation of any portion of the Work, (ii) is significantly or repeatedly deficient or late in its performance of the Work, or (iii) is implementing the Work in a manner which may cause an endangerment to human health or the environment. Settling Respondent may invoke the procedures set forth in Section XII (Dispute Resolution) to dispute EPA's determination that any of the circumstances described in clauses (i), (ii), or (iii) of this Paragraph have occurred. If EPA has determined that any of the circumstances described in clauses (i), (ii), or (iii) of this Paragraph have occurred, and if EPA is nevertheless unable after reasonable efforts to secure the resources (whether in cash or in kind) necessary to continue and complete the Work from the financial assurance instrument(s) posted by Settling Respondent pursuant to this Section, then, in such event, and upon receiving written notice from EPA, Settling Respondent shall immediately deposit into an account specified by EPA, in immediately available funds and without setoff, counterclaim, or condition of any kind, a cash amount equal to the estimated cost of the remaining Work to be performed as of such date, as determined by EPA.

28. Reduction of Amount of Financial Assurance. If, after the Effective Date, Settling Respondent believes that the estimated cost to complete the remaining Work has diminished below the amount set forth in Paragraph 24 above, Settling Respondent may, on any anniversary date of the Effective Date, or at any other time agreed to by the Parties, petition EPA in writing to request a reduction in the amount of the financial assurance provided under this Section so that the amount of the financial assurance is equal to the estimated cost of the remaining Work to be

performed. Settling Respondent shall submit a written proposal for such reduction to EPA which shall specify, at a minimum, the cost of the remaining Work to be performed and the basis upon which such cost was calculated. The decision to accept such a proposal and to allow a reduction of the amount of financial assurance in accordance herewith shall rest in EPA's sole discretion. If EPA decides to accept such a proposal, EPA shall notify Settling Respondent of such decision in writing. After receiving EPA's written acceptance, Settling Respondent may reduce the amount of the financial assurance in accordance with and to the extent permitted by such written acceptance. In the event of a dispute, Settling Respondent may reduce the amount of the financial assurance required hereunder only in accordance with a resolution of the parties reached pursuant to informal negotiations initiated in accordance with the provisions of Paragraph 47 of this Agreement or the terms of a written decision issued pursuant to Paragraph 49 of this Agreement resolving such dispute.

29. Change of Form of Financial Assurance. If, after the Effective Date, Settling Respondent desires to change the form of financial assurance provided pursuant to this Section, Settling Respondent may, on any anniversary date of the Effective Date, or at any other time agreed to by the Parties, petition EPA in writing to request a change in the form of financial assurance provided hereunder. Settling Respondent shall submit a written proposal for such change to EPA which shall specify, at a minimum, the cost of the remaining Work to be performed, the basis upon which such cost was calculated, and a detailed description of the proposed revised form of financial assurance. The decision to accept such a proposal and to allow a change in the form of financial assurance shall rest in EPA's sole discretion. If EPA decides to accept such a proposal, EPA shall notify Settling Respondent of such decision in

writing. After receiving EPA's written acceptance, Settling Respondent may change the form of financial assurance in accordance with and to the extent permitted by such written acceptance. In the event of a dispute, Settling Respondent may change the form of financial assurance required hereunder only in accordance with a resolution of the parties reached pursuant to informal negotiations initiated in accordance with the provisions of Paragraph 47 of this Agreement or the terms of a written decision issued pursuant to Paragraph 49 of this Agreement resolving such dispute.

30. Release of Financial Assurance. If Settling Respondent receives written notice from EPA in accordance with Paragraph 19 hereof that the Work has been fully and finally completed in accordance with the terms of this Agreement, or if EPA otherwise so notifies Settling Respondent in writing, Settling Respondent may petition EPA to allow the release or discontinuance of the financial assurance required hereunder. Settling Respondent shall submit a written proposal for such release to EPA which shall specify the basis for the requested release (e.g., full and final completion of the Work, etc.). The decision to accept such a proposal for release of the financial assurance shall rest in EPA's sole discretion. When EPA decides to accept such a proposal, EPA shall notify Settling Respondent of such decision in writing. After receiving EPA's written acceptance, Settling Respondent may release the financial assurance in accordance with and to the extent permitted by such written acceptance. In the event of a dispute, Settling Respondent may release the financial assurance required hereunder only in accordance with a resolution of the parties reached pursuant to informal negotiations initiated in accordance with the provisions of Paragraph 47 of this Agreement or the terms of a written decision issued pursuant to Paragraph 49 of this Agreement resolving such dispute.

VIII. PAYMENT OF PAST COSTS AND OVERSIGHT COSTS

31. In partial consideration of and in exchange for the United States' Covenant Not to Sue in Section XVI herein, Settling Respondent agrees to pay to EPA the sum of ONE HUNDRED THOUSAND FOUR HUNDRED TWENTY-NINE AND 93/100 DOLLARS ($100,429.93), within ten (10) days after the Effective Date, which sum reflects the costs incurred by EPA with respect to the Property through May 31, 2004.

32. Settling Respondent shall reimburse EPA, upon written demand, for all Oversight Costs. On a periodic basis, EPA will send Settling Respondent a bill requiring payment of Oversight Costs. The bill will consist of a standard Regionally-prepared cost summary which includes direct and indirect costs incurred by EPA and its contractors. Settling Respondent shall make all payments within thirty (30) days of Settling Respondent's receipt of each bill requiring payment, except as otherwise provided in Paragraph 36 of this Agreement.

33. The amounts to be paid by Settling Respondent pursuant to Paragraphs 31 and 32 of this Agreement shall be deposited in the Davenport and Flagstaff Smelters Superfund Site Special Account within the EPA Hazardous Substance Superfund to be retained and used to conduct or finance response actions at or in connection with the Site, or to be transferred by EPA to the EPA Hazardous Substance Superfund.

34. All payments required by this Section shall be made by Electronic Funds Transfer ("EFT") in accordance with current EFT procedures set forth below and shall be accompanied by a statement identifying the name and address of the party(ies) making payment, the Site name (Davenport and Flagstaff Smelters), EPA Region 8 and Site/Spill ID Number 082M, and the

EPA docket number for this action. Wire transfers must be sent directly to the Federal Reserve Bank in New York City with the following information:

ABA = 021030004
TREAS/NYC/CTR/
BNF=/AC-68011008

35. At the time of payment, Settling Respondent shall send notice that payment has been made to:

Cost Recovery Program Manager (8ENF-RC)
Superfund Enforcement Program
U.S. Environmental Protection Agency, Region 8
999 18th Street, Suite 300
Denver, CO 80202-2466

and

Director, Financial Management Officer (8TMS-F)
U.S. Environmental Protection Agency, Region 8
999 18th Street, Suite 300
Denver, CO 80202-2466

36. Settling Respondent may dispute payment of any Oversight Costs under Paragraph 32 if it determines that the United States has made an accounting error or if it alleges that a cost item that is included represents costs that are inconsistent with the NCP. Settling Respondent's written notice of its intent to invoke the dispute resolution procedures shall specifically identify the contested oversight costs and the basis for objection. If the dispute is not resolved before payment is due, Settling Respondent shall pay all uncontested Oversight Costs to the United States as specified in Paragraphs 32 and 34 of this Agreement by the due date. Simultaneously, the Settling Respondent shall establish an interest-bearing escrow account in a federally-insured bank duly chartered in the State of Utah and remit to that escrow account funds

equivalent to the amount of the contested oversight costs. In addition to the notice required pursuant to Paragraph 34 of this Agreement, the Settling Respondent shall send to the United States and EPA a copy of the correspondence that establishes and funds the escrow account, including, but not limited to, information containing the identity of the bank and bank account under which the escrow account is established as well as a bank statement showing the initial balance of the escrow account. If the United States prevails in the dispute, within five (5) days of the resolution of the dispute, the Settling Respondent shall pay the sums due (with Interest as described in Paragraph 37) to the United States in the manner described in Paragraphs 32 and 34 of this Agreement. If the Settling Respondent prevails concerning any aspect of the contested costs, the Settling Respondent shall pay that portion of the costs (plus Interest as described in Paragraph 37) for which it did not prevail to the United States in the manner described in Paragraphs 32 and 34 of this Agreement; Settling Respondent shall be disbursed any balance of the escrow account.

37. In the event that the payment required pursuant to Paragraph 31 of this Agreement is not made within ten (10) days of the Effective Date, or any of the payments for Oversight Costs required pursuant to Paragraph 32 of this Agreement are not made within thirty (30) days of Respondent's receipt of a bill, Respondent shall pay Interest on the unpaid balance. The Interest on the payment required pursuant to Paragraph 31 of this Agreement shall begin to accrue on the Effective Date and shall continue to accrue until the date of payment. The Interest on each of the payments for Oversight Costs required pursuant to Paragraph 32 of this Agreement shall begin to accrue on the date of the bill and shall continue to accrue until the date of payment. Payments of Interest made under this Paragraph shall be in addition to such other

remedies or sanctions available to the United States by virtue of Respondent's failure to make timely payments under this Section including, but not limited to, payment of stipulated penalties pursuant to Section XIII (Stipulated Penalties) of this Agreement.

IX. INDEMNIFICATION

38. EPA does not assume any liability by entering into this Agreement. Settling Respondent shall indemnify, save and hold harmless the United States and its officials, agents, employees, contractors, subcontractors, and representatives for or from any and all claims or causes of action arising from, or on account of, negligent or other wrongful acts or omissions of Settling Respondent, its officers, directors, employees, agents, contractors, subcontractors, and any persons acting on its behalf or under its control, in carrying out activities pursuant to this Agreement. Further, the Settling Respondent agrees to pay the United States all costs it incurs including, but not limited to, attorneys fees and other expenses of litigation and settlement arising from, or on account of, claims made against the United States based on negligent or other wrongful acts or omissions of Settling Respondent, its officers, directors, employees, agents, contractors, subcontractors, and any persons acting on its behalf or under its control, in carrying out activities pursuant to this Agreement. The United States shall not be held out as a party to any contract entered into by or on behalf of Settling Respondent in carrying out activities pursuant to this Agreement. Neither the Settling Respondent nor any such contractor shall be considered an agent of the United States.

39. The United States shall give Settling Respondent notice of any claim for which the United States plans to seek indemnification pursuant to Paragraph 38 and shall consult with Settling Respondent prior to settling such claim.

40. Settling Respondent waives all claims against the United States for damages or reimbursement or for set-off of any payments made or to be made to the United States, arising from or on account of any contract, agreement, or arrangement between Settling Respondent and any person for performance of Work on or relating to the Site, including, but not limited to, claims on account of construction delays. In addition, Settling Respondent shall indemnify and hold harmless the United States with respect to any and all claims for damages or reimbursement arising from or on account of any contract, agreement, or arrangement between Settling Respondent and any person for performance of Work on or relating to the Site, including, but not limited to, claims on account of construction delays.

X. INSURANCE

41. No later than fifteen (15) days before commencing any on-site Work, Settling Respondent shall secure, and shall maintain until Settling Respondent receives EPA's notice regarding completion of work pursuant to Paragraph 19 of this Agreement, comprehensive general liability insurance with limits of THREE MILLION DOLLARS ($3,000,000), combined single limit, and automobile liability insurance with limits of THREE MILLION DOLLARS ($3,000,000), combined single limit, naming the United States as additional insured. In addition, until Settling Respondent receives EPA's notice regarding completion of work pursuant to Paragraph 19 of this Agreement, Settling Respondent shall satisfy, or shall ensure that its contractors or subcontractors satisfy, all applicable laws and regulations regarding the provision of worker's compensation insurance for all persons performing the Work on behalf of Settling Respondent in furtherance of this Agreement. Prior to commencement of the Work under this Agreement, Settling Respondent shall provide to EPA certificates of such insurance and a copy

of each insurance policy. Settling Respondent shall resubmit such certificates and copies of policies each year on the anniversary of the Effective Date. If Settling Respondent demonstrates by evidence satisfactory to EPA that any contractor or subcontractor maintains insurance equivalent to that described above, or insurance covering the same risks but in a lesser amount, then, with respect to that contractor or subcontractor, Settling Respondent need provide only that portion of the insurance described above which is not maintained by the contractor or subcontractor.

XI. FORCE MAJEURE

42. "*Force majeure*," for purposes of this Agreement, is defined as any event arising from causes beyond the control of the Settling Respondent, of any entity controlled by Settling Respondent, or of Settling Respondent's contractors, that delays or prevents the performance of any obligation under this Agreement despite Settling Respondent's best efforts to fulfill the obligation. The requirement that the Settling Respondent exercise "best efforts to fulfill the obligation" includes using best efforts to anticipate any potential *force majeure* event and best efforts to address the effects of any potential *force majeure* event (1) as it is occurring and (2) following the potential *force majeure* event, such that the delay is minimized to the greatest extent possible. *Force Majeure* does not include financial inability to complete the Work or increased cost of performance.

43. If any event occurs or has occurred that may delay the performance of any obligation under this Agreement, whether or not caused by a *force majeure* event, the Settling Respondent shall orally notify EPA's On-Scene Coordinator or, in his or her absence, the Director of the Preparedness, Assessment and Emergency Response Program of the Office of

Ecosystems Protection and Remediation, EPA Region 8, within forty-eight (48) hours of when Settling Respondent first knew that the event might cause a delay. Within three (3) days thereafter, Settling Respondent shall provide in writing to EPA an explanation and description of the reasons for the delay; the anticipated duration of the delay; all actions taken or to be taken to prevent or minimize the delay; a schedule for implementation of any measures to be taken to prevent or mitigate the delay or the effect of the delay; the Settling Respondent's rationale for attributing such delay to a *force majeure* event if it intends to assert such a claim; and a statement as to whether, in the opinion of the Settling Respondent, such event may cause or contribute to an endangerment to public health, welfare or the environment. The Settling Respondent shall include with any notice all available documentation supporting its claim that the delay was attributable to a *force majeure*. Failure to comply with the above requirements shall preclude Settling Respondent from asserting any claim of *force majeure* for that event for the period of time of such failure to comply, and for any additional delay caused by such failure. Settling Respondent shall be deemed to know of any circumstance of which Settling Respondent, any entity controlled by Settling Respondent, or Settling Respondent's contractors knew or should have known.

44. If EPA agrees that the delay or anticipated delay is attributable to a *force majeure* event, EPA will notify the Settling Respondent in writing of the length of the extension, if any, for performance of the obligations affected by the *force majeure* event. An extension of the time for performance of the obligations affected by the *force majeure* event shall not, of itself, extend the time for performance of any other obligation. If EPA does not agree that the delay or

anticipated delay has been or will be caused by a *force majeure* event, EPA will notify the Settling Respondent in writing of its decision.

45. Settling Respondent may invoke the dispute resolution procedures set forth in Section XII (Dispute Resolution) to contest EPA's decision as to whether a delay or anticipated delay has been or will be caused by a *force majeure* event. In the dispute resolution process, Settling Respondent shall have the burden of demonstrating by a preponderance of the evidence that the delay or anticipated delay has been or will be caused by a *force majeure* event, that the duration of the delay or the extension sought was or will be warranted under the circumstances, that best efforts were exercised to avoid and mitigate the effects of the delay, and that Settling Respondent complied with the requirements of Paragraphs 42 and 43, above.

XII. DISPUTE RESOLUTION

46. Unless otherwise expressly provided for in this Agreement, only those disputes arising under or with respect to this Agreement that are specifically stated in this Agreement to be subject to dispute resolution shall be subject to dispute resolution and the dispute resolution procedures of this Section shall be the exclusive mechanism to resolve any such disputes.

47. In order to invoke the dispute resolution procedures of this Agreement, Settling Respondent shall notify EPA in writing, within ten (10) days of the action Settling Respondent seeks to dispute, of its intent to invoke the dispute resolution procedures. EPA and Settling Respondent shall have fifteen (15) days from EPA's receipt of Settling Respondent's written notification to resolve the dispute through informal negotiations (the "Negotiation Period"). The Negotiation Period may be extended at the sole discretion of EPA.

48. Statements of Position.

a. In the event that the Parties cannot resolve a dispute by informal negotiations under Paragraph 47, then the position advanced by EPA shall be considered binding unless, within fourteen (14) days after the conclusion of the informal negotiation period, Settling Respondent invokes the formal dispute resolution procedures of this Section by serving on EPA a written Statement of Position on the matter in dispute, including, but not limited to, any factual data, analysis or opinion supporting that position and any supporting documentation relied upon by Settling Respondent.

b. Within fourteen (14) days after receipt of Settling Respondent's Statement of Position, EPA will serve on Settling Respondent its Statement of Position, including, but not limited to, any factual data, analysis, or opinion supporting that position and all supporting documentation relied upon by EPA.

49. Following receipt of the Parties' Statements of Position submitted pursuant to Paragraph 48, the Director of the Preparedness, Assessment and Emergency Response Program of the Office of Ecosystems Protection and Remediation, EPA Region 8, will issue a written decision resolving the dispute. The Preparedness, Assessment and Emergency Response Program Director's decision is final and not subject to appeal and shall be incorporated into and become an enforceable part of this Agreement.

50. The invocation of the dispute resolution procedures under this Section shall not extend, postpone or affect in any way any obligation of the Settling Respondent under this Agreement, not directly in dispute, unless EPA agrees otherwise. Stipulated penalties with respect to the disputed matter shall continue to accrue, but payment shall be stayed pending

resolution of the dispute as provided in Paragraph 59. Notwithstanding the stay of payment, stipulated penalties shall accrue from the first day of noncompliance with any applicable provision of this Agreement. In the event that the Settling Respondent does not prevail on the disputed issue, stipulated penalties shall be assessed and paid as provided in Section XIII (Stipulated Penalties).

XIII. STIPULATED PENALTIES

51. Settling Respondent shall be liable to EPA for stipulated penalties in the amounts set forth in Paragraphs 52 and 53 for failure to comply with the requirements of this Agreement specified below, unless excused under Section XI (*Force Majeure*). "Compliance" by Settling Respondent shall include completion of the activities under this Agreement or any work plan or other plan approved under this Agreement identified below in accordance with all applicable requirements of law, this Agreement, the SOW, and any plans or other documents approved by EPA pursuant to this Agreement and within the specified time schedules established by and approved under this Agreement.

52. Stipulated Penalty Amounts - Work.

a. The following stipulated penalties shall accrue per violation per day for any noncompliance identified in subparagraph b of this Paragraph:

Penalty Per Violation Per Day	Period of Noncompliance
$1,500	1st through 14th day
$3,000	15th through 30th day
$32,500	31st day and beyond

b. Compliance Milestones.

(1) Payment of Past Costs and Oversight Costs in accordance with the time frames set forth in this Agreement;

(2) Commencement of Work pursuant to the schedule required pursuant to the Statement of Work;

(3) Completion of Work in accordance with the requirements set forth in the Statement of Work and Work Plan and pursuant to the schedule required pursuant to the Statement of Work;

53. Stipulated Penalty Amounts - Reports. The following stipulated penalties shall accrue per violation per day for failure to submit timely or adequate reports or other written documents required pursuant to Section V of this Agreement (Work to Be Performed), the Statement of Work, or the Work Plan:

Penalty Per Violation Per Day	Period of Noncompliance
$500	1st through 14th day
$1,000	15th through 30th day
$3,000	31st day and beyond

54. In the event that EPA assumes performance of a portion or all of the Work pursuant to Paragraph 77 (Work Takeover), Settling Respondent shall be liable for a stipulated penalty in the amount of $200,000.

55. All penalties shall begin to accrue on the day after the complete performance is due or the day a violation occurs, and shall continue to accrue through the final day of the correction of the noncompliance or completion of the activity. However, stipulated penalties

shall not accrue: (1) with respect to a deficient submission under Section V (Work to be Performed) during the period, if any, beginning on the 31st day after EPA's receipt of such submission until the date that EPA notifies Settling Respondent of any deficiency; or (2) with respect to a decision by the Director of the Preparedness, Assessment and Emergency Response Program of the Office of Ecosystems Protection and Remediation, EPA Region 8, under Paragraph 49 of Section XII (Dispute Resolution), during the period, if any, beginning on the 35th day after the day that Settling Respondent's Statement of Position is received by EPA pursuant to Paragraph 48 until the date that the Director issues a final decision regarding such dispute. Nothing herein shall prevent the simultaneous accrual of separate penalties for separate violations of this Agreement.

56. Following EPA's determination that Settling Respondent has failed to comply with a requirement of this Agreement, EPA may give Settling Respondent written notification of the failure and describe the noncompliance. EPA may send the Settling Respondent a written demand for the payment of the penalties. However, penalties shall accrue as provided in the preceding Paragraph regardless of whether EPA has notified the Settling Respondent of a violation.

57. All penalties accruing under this Section shall be due and payable to EPA within thirty (30) days of the Settling Respondent's receipt from EPA of a demand for payment of the penalties, unless Settling Respondent invokes the Dispute Resolution procedures under Section XII (Dispute Resolution). All payments to EPA under this Section shall be paid in accordance with the instructions set forth in Paragraphs 34 and 35 of this Agreement, and shall indicate that the payment is for stipulated penalties.

58. The payment of penalties shall not alter in any way Settling Respondent's obligation to complete the performance of the Work required under this Agreement.

59. Penalties shall continue to accrue as provided in Paragraph 55 during any dispute resolution period, but need not be paid until fifteen (15) days after the dispute is resolved by agreement or by a decision of EPA.

60. If Settling Respondent fails to pay stipulated penalties when due, the United States may institute proceedings to collect the penalties, as well as Interest. Settling Respondent shall pay Interest on the unpaid balance, which shall begin to accrue on the date of demand made pursuant to Paragraph 57.

61. Nothing in this Agreement shall be construed as prohibiting, altering, or in any way limiting the ability of the United States to seek any other remedies or sanctions available by virtue of Settling Respondent's violation of this Agreement or of the statutes and regulations upon which it is based, including, but not limited to, penalties pursuant to Section 106(b)(1) of CERCLA, 42 U.S.C. § 9606(b)(1); provided, however, that the United States shall not seek civil penalties pursuant to Section 106(b)(1) of CERCLA, 42 U.S.C. § 9606(b)(1), for any violation for which a stipulated penalty is provided herein, except in the case of a willful violation of the Agreement or in the event that EPA assumes performance of a portion or all of the Work pursuant to Section XVII, Paragraph 77.

62. Notwithstanding any other provision of this Section, EPA may, in its unreviewable discretion, waive any portion of stipulated penalties that have accrued pursuant to this Agreement.

XIV. ACCESS/NOTICE TO SUCCESSORS IN INTEREST

63. Settling Respondent shall, commencing upon the Effective Date, provide to EPA and the state, their authorized officers, employees, representatives, and all other persons acting under EPA or state oversight, access at all reasonable times to the Property and to any other property owned or controlled by Settling Respondent, for the purpose of conducting any activity related to this Agreement including, but not limited to, the following activities:

a. Monitoring the Work;

b. Verifying any data or information submitted to the United States;

c. Conducting investigations relating to contamination at or near the Site;

d. Obtaining samples;

e. Assessing the need for, planning, or implementing additional response actions at or near the Site;

f. Assessing implementation of health and safety practices as set forth in the approved Health and Safety Plan and quality assurance and quality control practices as defined in the approved Quality Assurance Project Plans;

g. Implementing the Work pursuant to the conditions set forth in the Statement of Work;

h. Assessing Respondent's compliance with this Agreement; and

i. Determining whether the Property, or other property at or near the Site, is being used in a manner that is prohibited or restricted, or that may need to be prohibited or restricted, by or pursuant to this Agreement.

64. Where any action under this Agreement is to be performed in areas owned by or in possession of someone other than Settling Respondent, Settling Respondent shall use its best efforts to obtain all necessary access agreements within thirty (30) days after the Effective Date, or as otherwise specified in writing by the On-Scene Coordinator. Settling Respondent shall immediately notify EPA if after using its best efforts it is unable to obtain such agreements. For purposes of this Paragraph, "best efforts" includes the payment of reasonable sums of money in consideration of access. Settling Respondent shall describe in writing its efforts to obtain access. EPA may then assist Settling Respondent in gaining access, to the extent necessary to effectuate the response actions described herein, using such means as EPA deems appropriate. Settling Respondent shall reimburse EPA, in accordance with the procedures in Section VIII (Payment of Past Costs and Oversight Costs), for all costs and attorney's fees incurred by the United States in obtaining such access.

65. If EPA determines that land/water use restrictions in the form of state or local laws, regulations, ordinances or other governmental controls are needed to implement the Work, ensure the integrity and protectiveness thereof, or ensure non-interference therewith, Settling Respondent shall take all necessary steps and cooperate with EPA's efforts to secure such governmental controls. If EPA determines that land/water use restrictions in the form of state or local laws, regulations, ordinances or other governmental controls are insufficient to implement the Work, ensure the integrity and protectiveness thereof, or ensure non-interference therewith, and that a restrictive easement, or its equivalent under Utah law, is necessary, Settling Respondent shall place such restrictive easement or its equivalent on the title of the Property and ensure that such restrictive easement or its equivalent remains on the title of the Property or any

portion thereof until EPA provides written notice that such restrictive easement or its equivalent can be removed from the title.

66. Notwithstanding any provision of this Agreement, EPA retains all of its access authorities and rights, as well as all of its rights to require land/water use restrictions, including enforcement authorities related thereto, under CERCLA, the Solid Waste Disposal Act, as amended by RCRA, and any other applicable statute or regulation, including any amendments thereto.

67. With respect to the Property and any other property owned or controlled by the Settling Respondent that is located within the Site, within fifteen (15) days after the Effective Date or the date of acquisition of any such property, whichever date is later, the Settling Respondent shall submit to EPA for review and approval a notice to be filed with the County Assessor, Salt Lake County, State of Utah, which shall provide notice to all successors-in-title that the property is part of the Site, that EPA selected a response action for OU3 of the Site on November 15, 2005, and that Settling Respondent has entered into an Agreement and Covenant Not to Sue with EPA requiring implementation of the response action. Such notice(s) shall identify the EPA Region where the Agreement was filed, the caption and EPA docket number of the Agreement, and the Effective Date. The Settling Respondent shall record the notice(s) within ten (10) days of EPA's approval of the notice(s). The Settling Respondent shall provide EPA with a certified copy of the recorded notice(s) within ten (10) days of recording such notice(s).

68. The Settling Respondent shall ensure that assignees, successors in interest, lessees, and sublessees of the Property, and any other property owned or controlled by Settling Respondent to which access is required pursuant to this Section, shall provide the same access

and cooperation required of Settling Respondent pursuant to this Section. The Settling Respondent shall ensure that a copy of this Agreement is provided to any current lessee or sublessee on the Property, and other properties referred to in this Paragraph, as of the Effective Date and shall ensure that any subsequent leases, subleases, assignments or transfers of the Property or an interest in the Property, and other properties referred to in this Paragraph, are consistent with this Section, and Sections V (Work to be Performed) and XIX (Parties Bound/Transfer of Covenant) of this Agreement.

XV. DUE CARE/COOPERATION

69. The Settling Respondent shall exercise due care at the Site with respect to the Existing Contamination and shall comply with all applicable local, State, and federal laws and regulations. The Settling Respondent recognizes that the implementation of response actions at the Site may interfere with the Settling Respondent's use of the Property and may require closure of its operations or a part thereof. The Settling Respondent agrees to cooperate fully with EPA in the implementation of response actions at the Site and further agrees not to interfere with any such response actions that EPA may take. EPA agrees, consistent with its responsibilities under applicable law, to use reasonable efforts to minimize any interference with the Settling Respondent's operations in conjunction with such response.

70. In the event of any action or occurrence during performance of the Work which causes or threatens a release of Waste Material from the Site that constitutes an emergency situation or may present an immediate threat to public health or welfare or the environment, Settling Respondent shall immediately take all appropriate action. Settling Respondent shall take these actions in accordance with all applicable provisions of this Agreement, including, but not

limited to, the Health and Safety Plan, in order to prevent, abate or minimize such release or endangerment caused or threatened by the release. Settling Respondent shall also immediately notify the On-Scene Coordinator or, in the event of his/her unavailability, the Regional Duty Officer, Preparedness, Assessment and Emergency Response Program of the Office of Ecosystems Protection and Remediation, EPA Region 8, (303) 293-1788, and the EPA Regional Emergency 24-hour telephone number of the incident or Site conditions. In the event that Settling Respondent fails to take appropriate response action as required by this Paragraph, and EPA takes such action instead, Settling Respondent shall reimburse EPA all costs of the response action not inconsistent with the NCP pursuant to the procedures set forth in Section VIII (Payment of Past Costs and Oversight Costs).

71. In addition, in the event of any release of a hazardous substance from the Site, Settling Respondent shall immediately notify the On-Scene Coordinator at (303) 293-1788 and the National Response Center at (800) 424-8802. Settling Respondent shall submit a written report to EPA within seven (7) days after each release, setting forth the events that occurred and the measures taken or to be taken to mitigate any release or endangerment caused or threatened by the release and to prevent the reoccurrence of such a release. This reporting requirement is in addition to, and not in lieu of, reporting under Section 103(c) of CERCLA, 42 U.S.C. § 9603(c), and Section 304 of the Emergency Planning and Community Right-To-Know Act of 1986, 42 U.S.C. § 11004, *et seq.*

XVI. UNITED STATES' COVENANT NOT TO SUE

72. Subject to the Reservation of Rights in Section XVII of this Agreement, upon EPA's receipt of the amounts specified in Section VIII (Payment of Past Costs and Oversight Costs) of this Agreement and any Interest or Stipulated Penalties that may become due according to the terms of this Agreement and upon completion of the Work specified in Section V (Work to Be Performed) to the satisfaction of EPA, the United States covenants not to sue or take any other civil or administrative action against Settling Respondent for any and all civil liability for injunctive relief or reimbursement of response costs pursuant to Sections 106 or 107(a) of CERCLA, 42 U.S.C. §§ 9606 or 9607(a), with respect to the Existing Contamination.

XVII. RESERVATION OF RIGHTS

73. The covenant not to sue set forth in Section XVI above does not pertain to any matters other than those expressly specified in Section XVI (United States' Covenant Not to Sue). The United States reserves and the Agreement is without prejudice to all rights against Settling Respondent with respect to all other matters, including but not limited to, the following:

a. claims based on a failure by Settling Respondent to meet a requirement of this Agreement, including but not limited to Section V (Work to be Performed), Section VIII (Payment of Past Costs and Oversight Costs), Section XIV (Access/Notice to Successors in Interest), Section XV (Due Care/Cooperation), and Section XXII (Payment of Costs);

b. any liability resulting from past or future releases of hazardous substances or pollutants or contaminants, at or from the Site caused or contributed to by Settling Respondent, its successors, assignees, lessees or sublessees;

c. any liability resulting from exacerbation by Settling Respondent, its successors, assignees, lessees or sublessees, of Existing Contamination;

d. any liability resulting from the release or threat of release of hazardous substances or pollutants or contaminants, at the Site after the Effective Date, not within the definition of Existing Contamination;

e. criminal liability;

f. liability for damages for injury to, destruction of, or loss of natural resources, and for the costs of any natural resource damage assessment incurred by federal agencies other than EPA; and

g. liability for violations of local, State or federal law or regulations.

74. With respect to any claim or cause of action asserted by the United States, the Settling Respondent shall bear the burden of proving that the claim or cause of action, or any part thereof, is attributable solely to Existing Contamination.

75. Nothing in this Agreement is intended as a release or covenant not to sue for any claim or cause of action, administrative or judicial, civil or criminal, past or future, in law or in equity, which the United States may have against any person, firm, corporation or other entity not a party to this Agreement.

76. Nothing in this Agreement is intended to limit the right of EPA to undertake future response actions at the Site or to seek to compel parties other than the Settling Respondent to perform or pay for response actions at the Site. Nothing in this Agreement shall in any way restrict or limit the nature or scope of response actions which may be taken or be required by

EPA in exercising its authority under federal law. Settling Respondent acknowledges that it is purchasing property where response actions may be required.

77. Work Takeover In the event EPA determines that Settling Respondent has ceased implementation of any portion of the Work, is seriously or repeatedly deficient or late in its performance of the Work, or is implementing the Work in a manner which may cause an endangerment to human health or the environment, EPA may assume the performance of all or any portions of the Work as EPA determines necessary. Settling Respondent may invoke the procedures set forth in Section XII (Dispute Resolution) to dispute EPA's determination that takeover of the Work is warranted under this Paragraph. Costs incurred by the United States in performing the Work pursuant to this Paragraph shall be considered Oversight Costs that Settling Respondent shall pay pursuant to Section VIII (Payment of Past Costs and Oversight Costs).

XVIII. SETTLING RESPONDENT'S COVENANT NOT TO SUE

78. In consideration of the United States' Covenant Not To Sue in Section XVI of this Agreement, the Settling Respondent hereby covenants not to sue and not to assert any claims or causes of action against the United States, its authorized officers, employees, or representatives with respect to the Site or this Agreement including, but not limited to, any direct or indirect claims for reimbursement from the Hazardous Substance Superfund established pursuant to the Internal Revenue Code, 26 U.S.C. § 9507, through Sections 106(b)(2), 107, 111, 112, 113 of CERCLA, 42 U.S.C. §§ 9606(b)(2), 9607, 9611, 9612, or 9613, or any other provision of law, any claim against the United States, including any department, agency or instrumentality of the United States under Sections 107 or 113 of CERCLA, 42 U.S.C. §§ 9607 or 9613, related to the

Site, or any claims arising out of response activities at the Site, including claims based on EPA's oversight of such activities or approval of plans for such activities.

79. The Settling Respondent reserves, and this Agreement is without prejudice to, actions against the United States based on negligent actions taken directly by the United States, not including oversight or approval of the Settling Respondent's plans or activities, that are brought pursuant to any statute other than CERCLA or RCRA and for which the waiver of sovereign immunity is found in a statute other than CERCLA or RCRA. Nothing herein shall be deemed to constitute preauthorization of a claim within the meaning of Section 111 of CERCLA, 42 U.S.C. § 9611, or 40 C.F.R. § 300.700(d).

XIX. PARTIES BOUND/TRANSFER OF COVENANT

80. This Agreement shall apply to and be binding upon the United States, and shall apply to and be binding upon the Settling Respondent, its members, managers, officers, directors, and employees. Each signatory of a Party to this Agreement represents that he or she is fully authorized to enter into the terms and conditions of this Agreement and to legally bind such Party.

81. Notwithstanding any other provisions of this Agreement, all of the rights, benefits and obligations conferred upon Settling Respondent under this Agreement may be assigned or transferred to any person with the prior written consent of EPA in its sole discretion.

82. The Settling Respondent agrees to pay the reasonable costs incurred by EPA to review any subsequent requests for consent to assign or transfer the benefits conferred by this Agreement.

83. In the event of an assignment or transfer of the Property or an assignment or transfer of an interest in the Property, the assignor or transferor shall continue to be bound by all the terms and conditions, and subject to all the benefits, of this Agreement except as EPA and the assignor or transferor agree otherwise and modify this Agreement, in writing, accordingly. Moreover, prior to or simultaneous with any assignment or transfer of the Property, the assignee or transferee must consent in writing to be bound by the terms of this Agreement including but not limited to the certification requirement in Section IV of this Agreement in order for the Covenant Not to Sue in Section XVI to be available to that party. The Covenant Not To Sue in Section XVI shall not be effective with respect to any assignees or transferees who fail to provide such written consent to EPA.

XX. DISCLAIMER

84. This Agreement in no way constitutes a finding by EPA as to the risks to human health and the environment which may be posed by contamination at the Property or the Site nor constitutes any representation by EPA that the Property or the Site is fit for any particular purpose.

XXI. DOCUMENT RETENTION

85. The Settling Respondent agrees to retain and make available to EPA all business and operating records, contracts, Site studies and investigations, and documents relating to operations at the Property, for at least ten (10) years, following completion of the Work, unless otherwise agreed to in writing by the Parties. At the end of ten (10) years, the Settling Respondent shall notify EPA of the location of such documents and shall provide EPA with an opportunity to copy any documents at the expense of Settling Respondent.

XXII. PAYMENT OF COSTS

86. If the Settling Respondent fails to comply with the terms of this Agreement, including, but not limited to, the provisions of Section V (Work to be Performed), or Section VIII (Payment of Past Costs and Oversight Costs) of this Agreement, it shall be liable for all litigation and other enforcement costs incurred by the United States to enforce this Agreement or otherwise obtain compliance.

XXIII. NOTICES AND SUBMISSIONS

87. Whenever, under the terms of this Agreement, written notice is required to be given or a report or other document is required to be sent by one Party to another, it shall be directed to the individuals at the addresses specified below, unless those individuals or their successors give notice of a change to the other Parties in writing. Notices that are to be provided to the United States and/or EPA shall be provided to the individuals specified below for both the United States and EPA. All notices and submissions shall be considered effective upon receipt, unless otherwise provided. Written notice as specified herein shall constitute complete satisfaction of any written notice requirement of the Agreement with respect to the United States, EPA, and the Settling Respondent, respectively.

As to the United States:

Heidi Kukis Hoffman, Trial Attorney
U.S. Department of Justice
Environmental Enforcement Section
999 18th Street, Suite 945N
Denver, CO 80202
Re: DJ # 90-11-2-08579

As to EPA:

Duc Nguyen
On-Scene Coordinator (8EPR-SA)
United States Environmental Protection Agency
Region 8
999 18th Street, Suite 300
Denver, CO 80202-2466

and

Director, Preparedness, Assessment, &
Emergency Response Program
United States Environmental Protection Agency
Region 8
999 18th Street, Suite 300
Denver, CO 80202-2466

As to the Settling Respondent:

Grant S. Kessler
3739 Brighton Point Drive
Salt Lake City, UT 84121

XXIV. EFFECTIVE DATE

88. The effective date of this Agreement shall be the date upon which EPA issues written notice to the Settling Respondent that EPA and DOJ have reviewed and responded to any public comments received and that such comments do not indicate that the Agreement is inappropriate, improper or inadequate.

XXV. TERMINATION

89. If any Party believes that any or all of the obligations under Section XIV (Access/Notice to Successors in Interest) are no longer necessary to ensure compliance with the requirements of the Agreement, that Party may request in writing that the other Party agree to terminate the provision(s) establishing such obligations; provided, however, that the provision(s)

in question shall continue in force unless and until the party requesting such termination receives written agreement from the other party to terminate such provision(s).

XXVI. CONTRIBUTION PROTECTION

90. In the event Settling Respondent is sued in contribution under CERCLA, the Parties hereto agree that the Settling Respondent is entitled to protection from contribution actions or claims as provided by CERCLA Section 113(f)(2), 42 U.S.C. § 9613(f)(2), for matters addressed in this Agreement. The matters addressed in this Agreement are all response actions taken or to be taken and response costs incurred or to be incurred by the United States or any other person with respect to the Existing Contamination.

91. The Settling Respondent agrees that with respect to any suit or claim for contribution brought by it for matters related to this Agreement it will notify the United States in writing no later than sixty (60) days prior to the initiation of such suit or claim.

92. The Settling Respondent also agrees that with respect to any suit or claim for contribution brought against it for matters related to this Agreement it will notify in writing the United States within ten (10) days of service of the complaint on it.

XXVII. INTEGRATION/EXHIBITS

93. This Agreement and its exhibits and any deliverables, technical memoranda, specifications, schedules, documents, plans, reports (other than progress reports), etc. that will be developed pursuant to this Agreement and become incorporated into and enforceable under this Agreement constitute the final, complete and exclusive agreement and understanding among the Parties with respect to the settlement embodied in this Agreement. The Parties acknowledge that there are no representations, agreements or understandings relating to the settlement other than

those expressly contained in this Agreement. Exhibits 1 through 5 are hereby incorporated into and enforceable under this Agreement.

94. Exhibit 1 shall mean the description of the Site OUs, including OU3 which is the subject of this Agreement.

95. Exhibit 2 shall mean the map depicting the Site.

96. Exhibit 3 shall mean the Statement of Work.

97. Exhibit 4 shall mean the Non-Time-Critical Removal Action Memorandum (PRP-Lead) for OU3 signed on November 15, 2005.

98. Exhibit 5 shall mean the Work Plan.

XXVIII. PUBLIC COMMENT

99. This Agreement shall be subject to a thirty-day (30) public comment period, after which EPA and DOJ may modify or withdraw their consent to this Agreement if comments received disclose facts or considerations which indicate that this Agreement is inappropriate, improper or inadequate.

IT IS SO AGREED:

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

BY:

Kerrigan G. Clough /for — 2/2/06

ROBERT E. ROBERTS
Regional Administrator, Region 8

Date

IT IS SO AGREED:

UNITED STATES DEPARTMENT OF JUSTICE

BY: 

2/1/06
Date

W. BENJAMIN FISHEROW, Deputy Chief
U.S. Department of Justice
Environmental Enforcement Section
P.O. Box 7611
Washington, D.C. 20530

IT IS SO AGREED:

L.C. CANYON PARTNERS, LLC

BY:

(Sign Here)

Date

[PLEASE PRINT NAME, TITLE AND ADDRESS OF PERSON AUTHORIZED TO SIGN ON BEHALF OF SETTLING RESPONDENT]

IT IS SO AGREED:

UNITED STATES DEPARTMENT OF JUSTICE

BY:

W. BENJAMIN FISHEROW, Deputy Chief
U.S. Department of Justice
Environmental Enforcement Section
P.O. Box 7611
Washington, D.C. 20530

Date

IT IS SO AGREED:

L.C. CANYON PARTNERS, LLC

BY: Grant S. Kesler

(Sign Here)

26 JANUARY 2006
Date

GRANT S. KESLER, MANAGING MEMBER

3739 BRIGHTON POINT DRIVE

SALT LAKE CITY, UTAH 84121

[PLEASE PRINT NAME, TITLE AND ADDRESS OF PERSON AUTHORIZED TO SIGN ON BEHALF OF SETTLING RESPONDENT]

EXHIBIT 1
Description of the Operable Units in the Site

Operable Unit #1

OU 1 consists of approximately 350 acres, primarily the residential portion of the Site, and is also known as the Residential Operable Unit.

Operable Unit #2

OU 2 consists of approximately 37 acres, primarily non-residential including all surface and ground water at the Site, and is also known as the Non-Residential Operable Unit.

Operable Unit #3

OU 3 consists of approximately 34 acres of undeveloped non-residential land located to the west of Little Cottonwood Canyon Road within which is situated one residential dwelling. OU3 is the portion of the Site subject to, and designated solely for the purposes of, this Agreement. OU3 was formerly a part of OU2 and is located primarily to the north of the location of the former Flagstaff Smelter, with the remnants of that smelter lying in the southern portion of OU3. The real property owned by Settling Respondent is situated within this operable unit and contains contaminated soil above the removal action levels. This is the surveyor's legal description of the metes and bounds for the proposed development. In addition, the operable unit also includes the Despain property where contaminated soil also exists above the removal action levels. The Despain property is shown on Exhibit 2 lying generally east of the development and bordered by the west line of North Little Cottonwood Canyon Road.

Boundary contiguous with North Little Cottonwood Canyon Road. The operable unit boundary starts at the intersection of the west line of North Little Cottonwood Canyon Road and the northern boundary line of Section 12 (South 89°51'03" West 1559.63 feet along the section line from the North Quarter Corner of Section 12, Township 3 South, Range 1 East, Salt Lake Base and Meridian).

From this intersection the boundary runs 319.52 feet along the arc of a 1030.37 foot radius curve to the left, (center bears North 69°38'34" East and long chord bears South 29°14'28" East 318.25 feet, with a central angle of 17°46'04") along the west line of North Little Cottonwood Canyon Road. After the curve the boundary bears South 38°07'30" East 183.62 feet along the west line of North Little Cottonwood Canyon Road. The property line then leaves the Road and bears South 85°41'58" West 194.22 feet; it

turns South 26°13'I9" West 204.64 feet; then bears South 63°46'41" East 104.10 feet; it then runs South 28°55'38" West 686.70 feet to the north line of the La Caille Subdivision.

Boundary contiguous with the La Caille Subdivision north line. At this point the property borders the La Caille Subdivision (Subdivision) South 89°18'23" West for 3.50 feet along its north line. From there the boundary bears South 47°23'24" West 105.00 feet along the north line of the Subdivision and intercepts the thalweg of Little Cottonwood Creek. The boundary follows the Creek South 38°48'00" West 158.00 feet along the north line of the Subdivision. It continues South 70°26'22" West 43.55 feet along the north line of the Subdivision and contiguous with the Creek. From there the boundary turns North 49°17'33" West 61.00 feet along the north line of the subdivision. The boundary stays east of the Creek and bears North 55°51'00" West 144.52 feet along the north line of the Subdivision. From there it bears North 20°22'26" West 193.38 feet along the north line of the Subdivision and then turns North 50°04'00" West 101.40 feet along the north line of the Subdivision. The property line then bears North 28'36'10" West 119.50 feet along the north line of the Subdivision and then turns North 11°19'35" West 79.75 feet along the north line of the Subdivision. At this point the boundary crosses the Creek and bears North 09°00'00" West 140.00 feet along the north line of the Subdivision and then turns North 82°58'30" West 91.90 feet along the north line of the Subdivision. Then the boundary bears North 47°24'00" West 69.87 feet along the north line of the Subdivision until it intercepts the west line of Section 12.

The boundary coincides with the west line of Section 12 bearing North 00°38'44" West for 726.33 feet to the Northwest Corner of Section 12. From there the property stays within Section 12 and the boundary bears North 89°51'07" East 467.76 feet along the section line until it turns into Section 1. The property continues North 10°08'30" East 526.58 feet until it reaches its northernmost point and turns South 79°51'30" East 415.84 feet until it intersects the west line of the North Little Cottonwood Canyon Road. The boundary follows the Road South 02°33'54" West 39.16 feet along the west line of the North Little Cottonwood Canyon Road. The property then follows the curvature of the Road southeasterly 412.22 feet along the arc of a 1030.37 foot radius curve to the left (center bears South 87°26'06" East and long chord bears South 8°53'46" East 409.47 feet, with a central angle of 22°55'20") along the west line of North Little Cottonwood Canyon Road.

Color Map(s)

The following pages contain color that does not appear in the scanned images.

To view the actual images, please contact the Superfund Records Center at (303) 312-6473.

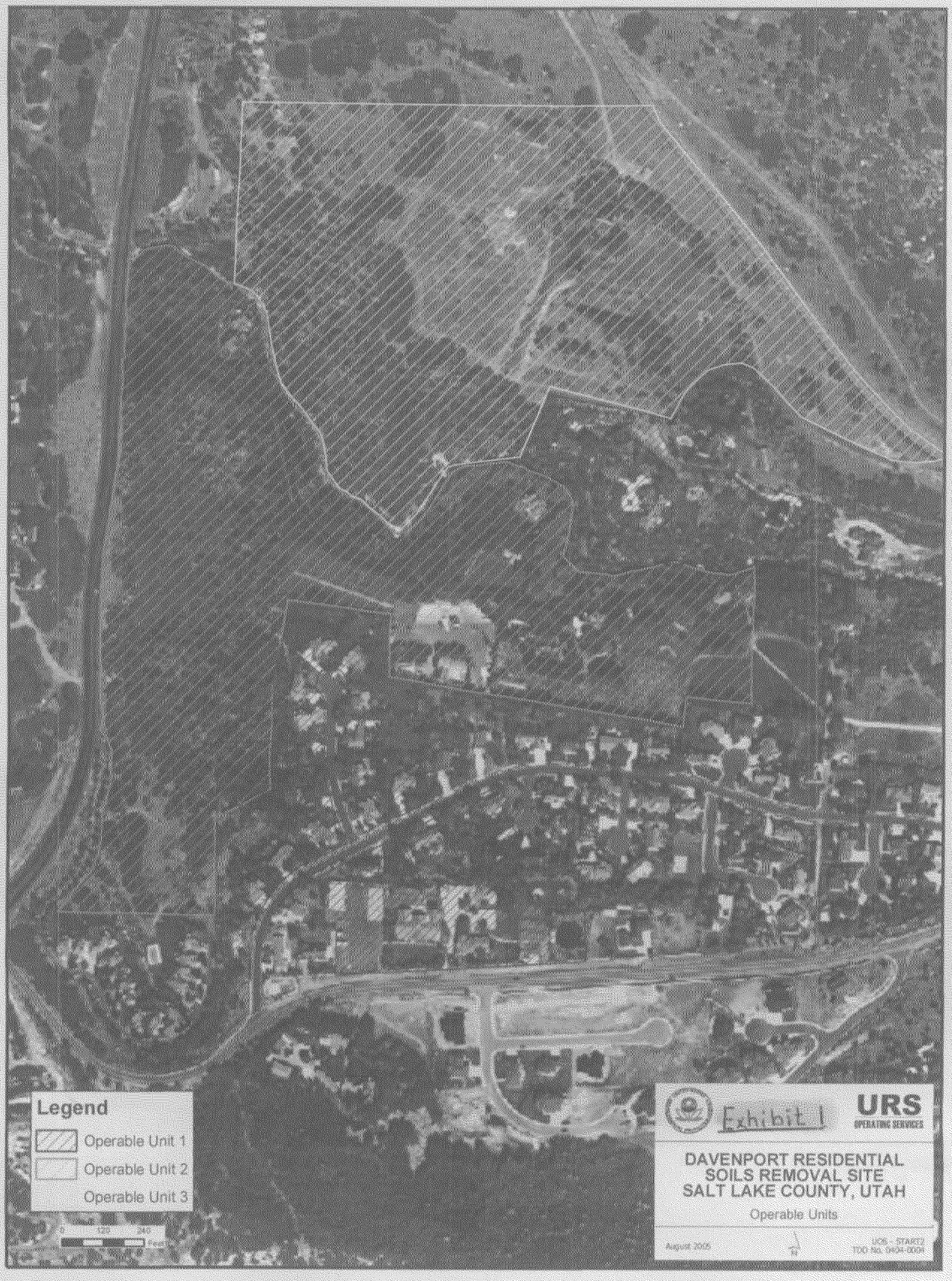


EXHIBIT 2

LEGEND

REMEDIAL ZONES:

ZONE 1 - 12" SOIL REMOVAL - 9,370 cyd

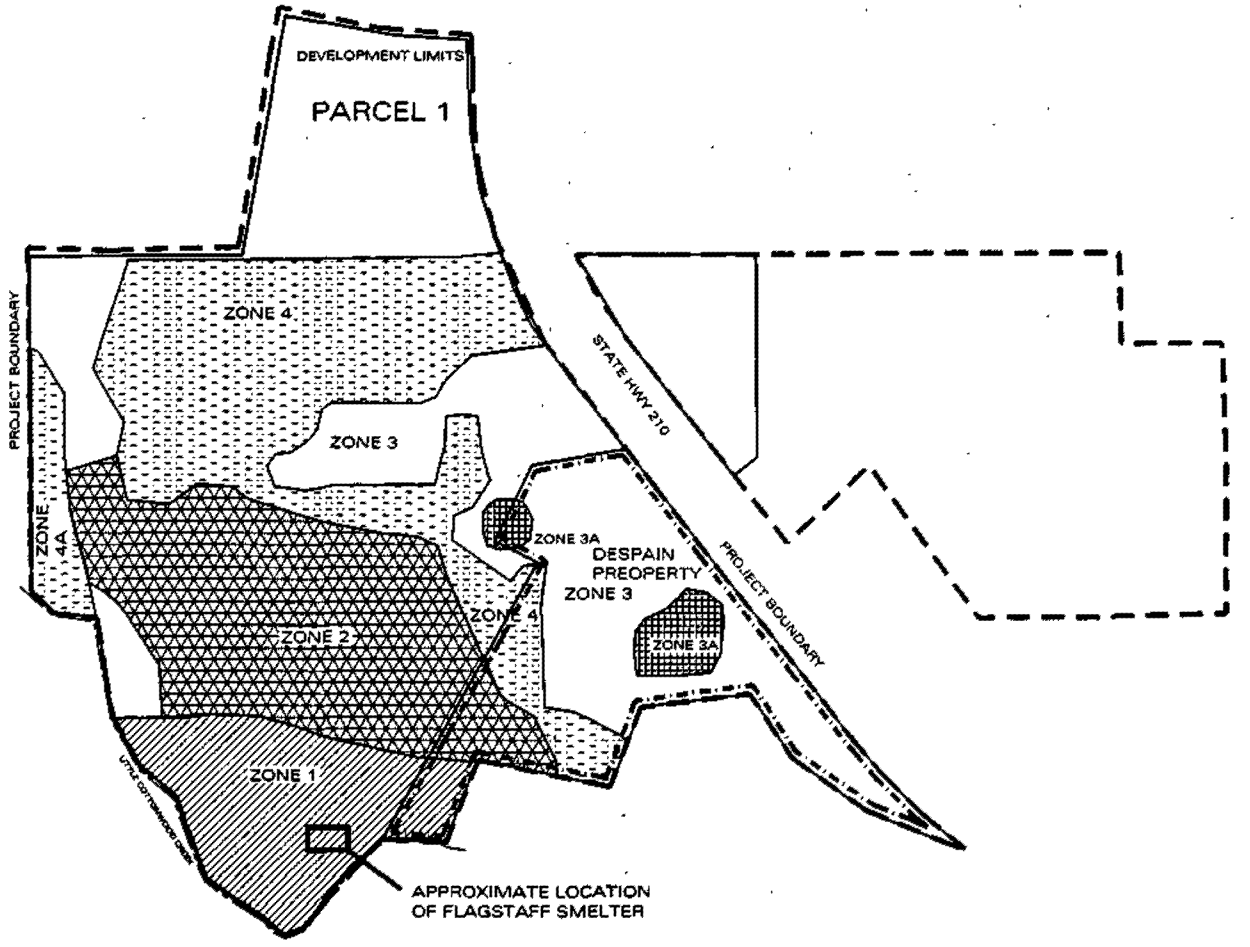
ZONE 2 - 12" SOIL REMOVAL - 18, 071 cyd

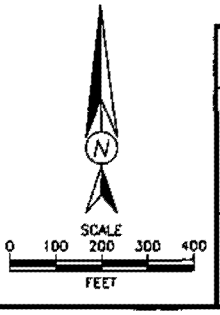
ZONE 3 - 6" REMOVAL IN ZONE 3A ONLY - 1,067 cyd

ZONES 4 and 4A - 6" SOIL REMOVAL - 14,238 cyd

NO SOIL REMOVAL - PB<600 PPM

TOTAL PURCHASE AREA - 49 ACRES
TOTAL REMEDIAL AREA - 26 ACRES





LITTLE COTTONWOOD AREA

SITE MAP WITH REMOVAL ZONES

RESOURCE MANAGEMENT CONSULTANTS
8136 SOUTH STATE ST.
SUITE 2A
MIDVALE, UT 84047
801-255-2626

July 2005

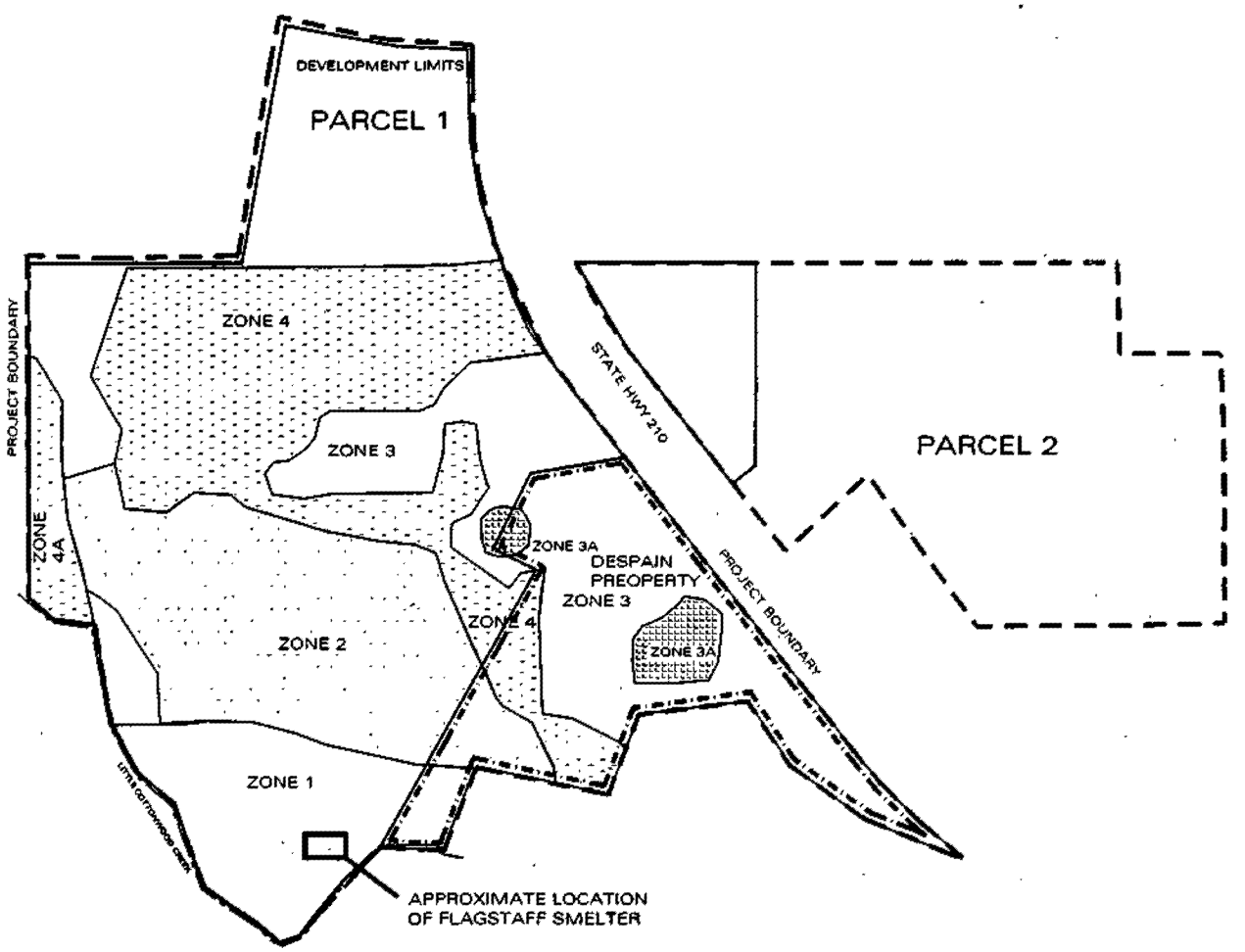
lcc 12A.dwg

LEGEND

REMEDIAL ZONES:

- ZONE 1 - 12" SOIL REMOVAL - 9,370 cyd
- ZONE 2 - 12" SOIL REMOVAL - 18, 071 cyd
- ZONE 3 - 6" REMOVAL IN ZONE 3A ONLY - 1,067 cyd
- ZONES 4 and 4A - 6" SOIL REMOVAL - 14,238 cyd
- NO SOIL REMOVAL - PB<600 PPM

TOTAL PURCHASE AREA - 54 ACRES
TOTAL REMEDIAL AREA - 26 ACRES



LITTLE COTTONWOOD AREA

Exhibit 2

SITE MAP WITH REMOVAL ZONES

RESOURCE MANAGEMENT CONSULTANTS

July 2005

2016-010025-0000352

EXHIBIT 3
Statement of Work
Davenport and Flagstaff Smelters Superfund Site
L.C. Canyon Partners, LLC Development of OU3

I. Purpose

The purpose of this Statement of Work ("SoW") is to describe the general content of the Work Plan required to be prepared by L.C. Canyon Partners, LLC ("Settling Respondent") pursuant to the Agreement and Covenant Not to Sue L.C. Canyon Partners, LLC ("Agreement"), and activities related to the Agreement and Work Plan to be performed by Settling Respondent. The SoW was written to mitigate against any serious communication problems between USEPA and the Settling Respondents and to avoid ambiguities that lead to misunderstandings. Such miscommunications may result in activities and submittals that do not conform to the Agreement.

II. Work to Be Performed

The Non-Time Critical Removal Action ("NTCRA") Memorandum, dated 15 November 2005, defines the activities that shall be completed to reduce risk to human health and the environment at the Site.

1. Removal Action Work Plan

a. The Removal Action Work Plan shall describe the removal activities to be performed in accordance with the NTCRA Memorandum. The Work Plan shall discuss:

- Site background;
- Project organization;
- Site characterization;
- Scope of removal activities to include discussion of:
    - Staging area,
    - Mobilization plan,
    - Site preparation,
    - Treatment of soils prior to disposal,
    - Disposal procedures,
    - Excavation of soils,
    - Care of vegetation and local resources (e.g., little cottonwood creek),
    - Dust control measures,
    - Personnel and equipment monitoring and decontamination procedures, and
    - Other activities required to implement the removal action;
- Attainment of applicable or relevant and appropriate requirements
- Institutional controls;
- Anticipated community relations activities;
- Schedule of project deliverables with associated submittal dates and proposed construction schedule.

b. The project deliverables required for adequately describing the removal activities shall include the following:

(1) Sampling and Analysis Plan - The Sampling and Analysis Plan shall be submitted in accordance with the National Contingency Plan (NCP), Section 300.415(b)(4)(ii) for removal actions. The sampling and analysis plan shall consist of two parts:

- The field sampling plan, which describes the number, type, and location of samples and the type of analyses; and
- The quality assurance project plan, which describes policy, organization, and functional activities and the data quality objectives and measures necessary to achieve adequate data for use in planning and documenting the removal action.

(2) Site Health and Safety Plan (HASP) – A Site HASP shall be developed in accordance with OSHA Standard 29 CFR Part 1910 and Part 1926.

(3) Monthly Removal Response Reporting. Monthly reports required pursuant to Section V of the Agreement shall contain the information specified in *Superfund Removal Procedures, Removal Response Reporting: POLREP and OSC Reports* (EPA, 1994). The monthly report shall include the following sections: Section I - Heading, Section II - Background, Section III - Site Information, Section IV - Response Information, Section V - Cost, and Section VI - Disposition of Wastes. Section I shall include date of report, site name, author of report, recipient of report, and number of report. Section II shall include site number, response authority, CERCLIS number, NPL status, Action Memorandum date, actual start date, demobilization date, and completion date. Section III shall include incident category (e.g., time critical, fund-lead, etc.), description of site, description of threat, and removal site investigation results. Section IV shall include description of contamination, cleanup standards, actions to date, and planned actions. Section V shall include information pertaining to cost of the removal reported as either a percentage of work completed and estimated oversight costs or actual dollars spent on the project and projected expenditures. Finally, Section VI shall include a description of the waste, treatment process required prior to disposal, volume of treated waste, temporary storage, and final disposition of the waste. Use the approved report template included as an appendix to this SoW.

(4) Construction Completion Report – A completed construction report shall be developed in accordance with *Close-Out Procedures for National Priorities List Sites* (EPA, 2000). This report, along with the remedial action reports for other portions of the Site will be used as the basis for development of the site Final Close-out Report. The Report shall include the following chapters:

I. Introduction - Include a brief description of the location, size, environmental setting, and operational history of the site. Describe the operations and waste management practices that contributed to contamination of the site. Describe the major findings and results of site investigation activities.
II. Operable Unit Background - Summarize requirements specified in the ROD, ESD, and NTCRA Memorandum for OU3. Include information on the cleanup goals, institutional controls, monitoring requirements, and other parameters applicable to the design, construction, operation, and performance of the removal action.
III. Construction Activities- Provide a step-by-step summary description of the activities undertaken to construct and implement the remedy (e.g., mobilization and site preparatory work; construction of the treatment system; associated site work, such as fencing and surface water collection and control; system operation and monitoring; and sampling activities).
IV. Chronology of Events- Include significant milestones and dates, such as, design submittal and approval; ROD amendments or ESDs; mobilization and construction of the remedy; significant operational events such as treatment system/application start-up, monitoring and sampling events, system modifications, operational down time, variances or non-compliance situations, and final shut-down or cessation of operations; final sampling and confirmation-of-performance results; required inspections; demobilization; and completion or startup of post-construction operation & maintenance activities.
V. Performance Standards and Construction Quality Control- Describe the overall performance of the technology in terms of comparison to cleanup goals. For treatment remedies, identify the quantity of material treated, the strategy used for collecting and analyzing samples, and the overall results from the sampling and analysis effort.
VI. Final Inspection and Certifications- Report the results of the various inspections to include the pre-certification inspection, and identify noted deficiencies. If implemented, summarize details of the institutional controls (e.g., the type of institutional control, who will maintain the control, who will enforce the control).
VII. Operation & Maintenance Activities- Describe the general activities for post-construction operation and maintenance activities, such as monitoring, site maintenance, and closure activities.
VIII. Summary of Project Costs- Provide the actual final costs and applicable year for the project. If actual costs are not available, provide estimated costs.
IX. Observations and Lessons Learned- Provide site-specific observations and lessons learned from the project, highlighting successes and problems encountered and how resolved.
X. Operable Unit Contact Information- Provide contact information (names, addresses, phone numbers, and contract/reference data) for the major design and remediation contractors, EPA

oversight contractors, and the respective RPM and project managers for EPA, the State, and the PRPs, as applicable.

Appendix A. Cost and Performance Summary

Supplemental Appendices. Place for maps, schematics, references.

2. Upon or near completion of the removal action, and before the submittal of the construction completion report, a pre-final inspection by EPA and UDEQ shall be arranged by Settling Respondent. Settling Respondent shall document any "punch-list" items resulting from the inspection and work to address all the punch-list items to the satisfaction of EPA, in consultation with UDEQ.

III. Community Relations

Settling Respondent shall assist EPA and UDEQ, if requested, in performing the community relations activities specified in Section 300.415(n) of the NCP.

IV. References

EPA, 1994 (June). Superfund Removal Procedures, Removal Response Reporting: POLREP and OSC Reports. Office of Solid Waste and Emergency Response (OSWER) Directive 9360-3-03, United States Environmental Protection Agency, Washington, D.C. 20460

EPA, 2000 (January). Close Out Procedures for National Priorities List Sites. OSWER Directive 9320.2-09A-P, EPA 540-R-98-016, United States Environmental Protection Agency, Washington, D.C. 20460

V. Appendices

PROGRESS REPORT template
Davenport & Flagstaff Smelters Superfund Site

I. HEADING

Date: *(File each report on the last Saturday of each month until demobilization completed)*
Site Name: **Davenport & Flagstaff Smelters**
From: **Resource Environmental Management Consultants**
To: **James Hanley, USEPA Region 8, Oversight Manager**
Progress Report No.: *(sequential numbered series of reports for ease in retrieval)*

II. BACKGROUND

Site No.: **082M - OU 3**
Response Authority: **CERCLA**
CERCLIS No: UT
NPL Status: **Listed**
Action Memo: **TBD** *(use date of final action memo authorizing this removal/to be provided by USEPA)*
Start Date: **TBD** *(use effective date of Agreement governing this response action/to be provided by USEPA)*
Demobe Date: **TBD** *(use forecast date until demobe occurs then use that effective date)*
Completion Date: **TBD** *(use forecast date for delivery of final closeout report)*

III. SITE INFORMATION

A. Incident Category

Non-Time Critical, Private-funded response.

B. Site Description

1. **Site Location** [below is an example of a typical description]

The Davenport and Flagstaff Smelters Superfund Site is located in the foothills of the Wasatch Mountains in a residential area at the mouth of Little Cottonwood Canyon, approximately 15 miles southeast of Salt Lake City (population of 833,840), and one mile east of Sandy City (population of 96,310), Utah. The development undergoing the response is located within the northwest quarter of Section 12, Township 3 South, Range 1 East, Salt Lake base and Meridian. The former Flagstaff Smelter was located on the north side of Little Cottonwood Creek, and the former Davenport Smelter was located on the opposite side of the creek approximately 1/4 mile south of the Flagstaff Smelter. Currently, within the

Operable Unit 3 (OU#3), there are 37 undeveloped residential lots contaminated with elevated concentrations of lead and arsenic.

2. **Description of Threat** [below is an example of a typical description]

Arsenic and lead (but particularly lead) have been identified at the Site as the contaminants of concern (COCs). Arsenic and lead are hazardous substances, as defined by Section 101 (14) of CERCLA. These hazardous substances appear to have been released into the residential soils by historic smelter activities and were dispersed as airborne particulate onto the surface of what is now under development as the OU #3 residential area. The threats posed by this Site include dermal absorption; inhalation of contaminated dust; ingestion of potentially contaminated plants and fish; and the inadvertent ingestion of contaminated soil and surface water.

C. **Removal Site Investigation Results** [below is an example of typical results]

Because residential properties are being developed near the former smelter facilities, the subdivided lots may contain concentrations of lead and arsenic exceeding the action level. USEPA Region 8 has authorized contaminated soil removal from these areas under a "nontime-critical" Removal Action memorandum. The visible "olive-colored, silty" soil, found distinctively at these properties, is considered a principle-threat waste. Principle-threat wastes are source materials that are considered highly toxic or highly mobile, that generally cannot be reliably contained, or would present a significant risk to human health or the environment should exposure occur. In addition, high lead and arsenic levels on properties adjacent to the former Flagstaff smelter with visible characteristics may also be indicative of the presence of principle-threat waste.

In general, highly leachable forms of lead minerals were detected in both surface and subsurface soil samples, and TCLP concentrations appeared to decrease with depth. For total lead, some zones have extremely high concentrations and these zones appear to be randomly distributed across the investigated properties. Lead and arsenic contamination is known to extend at least 12 inches below ground surface; however, the vertical extent of contamination will be defined during the removal confirmation sampling program or the test pits dug at UDEQ/USEPA's request for obtaining verification information.

IV. **PHYSICAL PROGRESS INFORMATION FOR THE RESPONSE** [below is an example of typical progress information desired in this report]

A. **Contamination:**

Total lead (>180,000 mg/kg) and TCLP lead (>989 mg/L - very leachable)
Total arsenic (>20,000 mg/kg) and TCLP arsenic (<5mg/L)

Contamination, including principle threat waste (extremely leachable/mobile source materials from mining operations) found on and in the vicinity of the former smelters extends to 12 inches below ground surface.

B. Cleanup Levels:

The action levels established for the Site are 600 milligrams/kilograms (mg/kg) for lead and 126 mg/kg for arsenic in the residential soils. According to the Record of Decision and Explanation of Significant Differences (ESD) written for application to the OU3, all principle threat waste shall be excavated and removed off-site.

C. Removal Actions to Date:

(Here describe what has been accomplished since commencing the environmental remediation activities or since the last report)

D. Planned Removal Actions for Next Month:

(Here describe what you plan to accomplish by the next report)

E. Key Issues and Proposed Resolutions

(Describe any technical or regulatory compliance issues impacting your plans)

V. **COST INFORMATION** [below is an example of typical cost information desired in this report]

The project budget estimated for this response action is $1,500,000.

The actual accrued or incurred costs are:

A. Contractor Costs:

- **Innovative Excavation, Inc.** — **$** *(invoiced amount or progress payment)*
- **ECDC/Allied Waste Wasatch Regional Landfill** — **$** *(invoiced amount or progress payment)*

B. Environmental Consultant Costs:

- **RMC, Inc.** — **$** *(invoiced amount or progress payment)*

C. Any Other Costs:

D. Total Environmental Remediation Project Costs — *$ (rollup categories)*

VI. **DISPOSITION OF WASTES** [below is an example of typical disposal information desired in this report]

As of this date, a total of *("reported quantity")* **tons of treated soil has been disposed at the ECDC/Allied Waste Wasatch Regional Landfill, Utah.** *(Also report the shipments of waste accepted by the landfill in cubic yards if that is the form of direct measurement for this project)*

EXHIBIT 4
Non-Time-Critical Removal Action Memorandum (PRP-Lead) for OU3

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8
999 18TH STREET- SUITE 300
DENVER, CO 80202-2466
Phone 800-227-8917
http://www.epa.gov/region08

0

Ref: 8EPR-ER

NOV 15 2005

ENFORCEMENT ACTION MEMORANDUM

SUBJECT: Enforcement-Non-Time Critical Removal Action for the Davenport and Flagstaff Smelters NPL Site (Operable Unit 3)

FROM: Duc Nguyen, On-Scene Coordinator
Emergency Response Team

THROUGH: Johanna Miller, Supervisor
Emergency Response Unit

Douglas M. Skie, Director
Preparedness, Assessment & Emergency Response Program

TO: Max H. Dodson, Assistant Regional Administrator
Office of Ecosystems Protection & Remediation

Site ID#: 082M
Category of Removal: Non-Time Critical, Enforcement-Lead

I. PURPOSE

The purpose of this Action Memorandum is to request and document approval of the proposed Enforcement Non-Time Critical Removal Action – Operable Unit 3 (NTCRA-OU3) as part of the Davenport and Flagstaff Smelters NPL Site located in Salt Lake County, Utah. This NTCRA-OU3 is situated within the referenced National Priorities List (NPL) Site and will be initiated within the context of an Agreement and Covenant Not Sue L.C. Canyon Partners, LLC (Agreement), the Record of Decision (ROD), and the Explanation of Significant Differences (ESD) for OU1.

In accordance with determinations for the appropriateness of a removal action as specified in the National Contingency Plan (NCP), Section 300.415(b)(2), this Removal Action addresses the actual or potential exposure of human populations to hazardous substances, pollutants, or contaminants; and high levels of principal-threat waste in soils largely at or near the surface, that may migrate. For the purpose of this action memo, the term principal-threat waste refers to soils with lead and arsenic concentrations that fail the Toxicity Characteristic Leaching Procedure [TCLP]. The contaminated area specified in this Removal Action consists of approximately 26 acres including a residential property (3 acres) identified as F05 within OU1 (see exhibits 1 & 2—attached). This OU3 is located within the Davenport and Flagstaff Smelter NPL Site and will be developed for residential use and open space. The Explanation of Significant Differences (ESD) to the Operable Unit #1 Record of Decision (ROD) fully describes the areas considered in this Removal Action.

II. SITE CONDITIONS AND BACKGROUND

The CERCLIS ID number for the Davenport and Flagstaff Smelters NPL Site (Site) is UTD988075719. Site conditions are such that this Removal Action is classified as Non-Time Critical. The Flagstaff Smelter, discovered in 1991, was assigned an EPA Identification Number UTD988075719 and placed on the EPA Comprehensive Environmental Response, Compensation, and Liability Act Information System (CERCLIS) for Utah on April 20, 1992, under the name Little Cottonwood Smelter. The Davenport Smelter was subsequently discovered in 1992. During the focused Site Inspections conducted in 1994, the Site was renamed in CERCLIS as the Davenport and Flagstaff Smelters. The Site was proposed for the National Priorities List (NPL) status on December 1, 2000, and placed on the list April 30, 2003. The approved Time-Critical Removal Action (TCRA) Memorandum (April 22, 2004) and Non-Time Critical Removal Action Memorandum (May 26, 2005) for OU1 (NTCRA-OU1) provide a basic description of the Site (see Attachments 1 & 2 for additional information).

A. Site Description

1. Removal site evaluation

The site has been divided into three operable units:

1) A residential operable unit (OU1) that covers both former Davenport and Flagstaff Smelters' residential properties that have lead and arsenic contamination, including leachable principal-threat waste (source materials) due to historic smelting operations. The 04/22/04 TCRA Memorandum (OU1) was approved to address properties with the worst contamination. Subsequently, the 05/26/04 NTCRA-OU1 Memorandum was approved to address the remaining residential properties;

2) A non-residential operable unit (OU2) that covers non-residential properties between the two smelters including groundwater, surface water, and the ecosystem; and

3) A new operable unit (OU3) of approximately 34 acres of mostly undeveloped land has been carved out of OU2 to allow L.C. Canyon Partners, LLC (LCP) to remediate this portion of the Site in conjunction with LCP's construction of a proposed residential subdivision called Granite

Oaks. Note that approximately 3 acres that lie within OU1 (a residential property identified as F05), located adjacent to the northern extent of the Flagstaff Smelter, will be cleaned up with this OU3 removal action. The remediation by LCP will be performed under the terms of the Agreement.

OU1 has previously been referred to as the Residential Operable Unit (ROU). OU3 has been carved out of OU2 which was formerly referred to as the Non-residential Operable Unit (NROU). The actual boundaries of the NPL Site have not been delineated; however, a general depiction of the operable units is described in Exhibit 1 (attached).

LCP will conduct the removal action described in this proposed NTCRA-OU3 and redevelop the contaminated property into residential, public parks, and open space uses. The ESD extends the residential cleanup standards and specific components of the ROU to the OU3 planned residential development. The removal areas of approximately 26 acres are shown in the attached Exhibit 2.

The EPA Region VIII, Emergency Response Branch Technical Assistance Team (TAT) in April of 1992, conducted a Phase I Site assessment of the Flagstaff Smelter. Detections of elevated levels of arsenic and lead in surface and subsurface soils led to a Phase II Site Assessment. During the Phase II investigation, the Davenport Smelter was discovered south of the Flagstaff Smelter. The area around the Davenport Smelter was investigated as Phase III in July of 1992 and the results are presented in the *Site Assessment, Little Cottonwood Creek Smelter Sites – Phase III, Davenport Smelter* (TAT, 1993). As stated in the *Record of Decision* (EPA, 2002), "... [these investigations] revealed high levels and widespread distribution of arsenic and lead contaminated soils surrounding the former smelters."

A *Preliminary Assessment* (PA) was performed in August 1992; *Focused Site Inspections* in 1994; and additional sampling in 1994. The data demonstrates the distribution of soil contaminants dispersed from the source area via air, surface water, or groundwater pathways and is available in *Analytical Results Report – Davenport Smelter* (UDEQ, 1995), and *Analytical Results Report – Flagstaff Smelter* (UDEQ, 1995a).

The Site was further characterized in 1998 with data collected primarily from residential areas although sampling was performed in non-residential areas. The scope of this investigation was described in detail in a document entitled *Final Quality Assurance Project Plan for Davenport and Flagstaff Smelter Site Characterization Study* (SAIC, 1998) and represents the majority of the data collected to characterize the site. Site characterization results were reported in the *Final Site Characterization Study for Davenport and Flagstaff Smelters Residential Area* (SAIC, 2000). As stated in the *Remedial Investigation Report* (URSGWC, 2001a), "UDEQ also performed an investigation of undeveloped areas with emphasis on the area around the former Flagstaff Smelter as described in a document entitled *Addendum to the Final Quality Assurance Project Plan For Davenport and Flagstaff Smelter, Sampling of Undeveloped Lands* (UDEQ, 2000a). The results of this investigation were reported in a document entitled *Addendum to the Final Quality Assurance Project Plan for Davenport and Flagstaff Smelter, Sampling of Undeveloped Lands, Sampling Results Report* (UDEQ, 2000b). "Lead levels greater than 200,000 mg/kg were detected in the investigation area (UDEQ, 2000b)."

As part of the Remedial Investigation (RI), URS Greiner Woodward Clyde (URSGWC) collected soil samples in March 2001, at 3 residential properties that had not been sampled during previous investigations, and one property that had been sampled previously. URSGWC expanded collection of soil samples in July 2001, to further characterize the extent of contamination at 6 residences. Two surface water springs within the residential area were also sampled in July 2001. The RI states, "In addition to the residential areas, it was proposed to collect samples in an undeveloped area (Salt Lake City property) west of the residential lots located on Quail Ridge Road. Sampling in this area better defined the residential/nonresidential boundary and more fully defined the concentration contours along the edge of the ROU."

The *Baseline Human Health Risk Assessment* (ISSI, 1999) was performed for the Davenport and Flagstaff Smelter sites by EPA as part of the *Final Site Characterization Study* (SAIC, 2000). As stated in the *Remedial Investigation Report* (URSGWC, 2001a), "A risk management decision by the UDEQ and USEPA established action levels of 600 mg/kg for lead and 126 mg/kg for arsenic in residential surface soils for these sites."

The *Focused Feasibility Study Report* (URSGWC, 2001) for the OU1 was completed in December 2001. Utilizing the studies cited above that represent the bulk of the Administrative Record, and the public process, EPA, with concurrence of UDEQ, selected a remedy for residential properties and issued the Record of Decision (EPA, 2002) on September 30, 2002.

In preparation for implementation of the ROU remedy, URS Corporation (URS) collected field sampling and X-ray fluorescence (XRF) analyses to characterize lead and arsenic concentrations in soil to provide additional soil data for the accurate estimate of soil volumes exceeding the removal action levels of 600 mg/kg for lead and 126 mg/kg for arsenic. The pre-design sampling locations complement previously recorded lead and arsenic concentrations within the ROU and is delineated in the *Report of Findings for Pre-Remedial Design Sampling Residential Operable Unit* (URS, 2003).

A TCRA Memorandum was initiated April 22, 2004, to address a minimum of four of the 20 contaminated residential properties within the area situated at the location of the former Davenport Smelter, within the Davenport and Flagstaff Smelters NPL Site. The removal action was time-critical "because there are residential properties which lie on top of the former Davenport smelter and contain concentrations of lead and arsenic far exceeding the action level." The TCRA states, "The proposed Removal Action will address most critical immediate threats identified during the EPA and UDEQ sampling events which occurred from 1992 to present. Since the Site has not been funded for Remedial Action, but there appear to be other on-going time critical threats of contamination, there will likely be an Amendment to this memorandum which includes more identified properties with similar conditions for subsequent Removal Action(s). In addition, the subsequent sampling, analysis and evaluation may identify additional time critical threats at the Site." Six properties within the Davenport Smelter area of the Davenport and Flagstaff Smelters Superfund Site ROU were cleaned-up under this TCRA.

A Non-Time Critical Removal Action (NTCRA) (EPA, 2005) was initiated May 26, 2005 to address the remaining properties not cleaned up under the 2004 TCRA.

2. Physical location

The Davenport and Flagstaff Smelters Superfund Site is located approximately 15 miles southeast of Salt Lake City, Utah, near the mouth of Little Cottonwood Canyon and within the southwest quarter of the northwest quarter of Section 6, Township 3 South, Range 1 East, Salt Lake Base and Meridian (see figure 1-1 from the *Focused Feasibility Study (FFS)*(URSGWC, 2001)). Three major roads are located in the vicinity of the site (see figure 1-2 of FFS). These roads include Little Cottonwood Canyon Road (Utah 209) at the south end of the site, North Fork Little Cottonwood Canyon Road (Utah 210) along the north margin of the site, and Wasatch Boulevard on the west end of the site. All three roads are major thoroughfares used for commuting by local residents and for recreational access to Little Cottonwood Canyon. The Davenport Smelter was located on the southern side of the canyon, near Little Cottonwood Canyon Road. The Flagstaff Smelter was located north of Little Cottonwood Creek.

The Site is situated near a transitional boundary between the bedrock of the mountains and unconsolidated valley fill, and within a zone of complex surface faulting associated with the Wasatch fault. The Site lies within the foothills of the Wasatch Mountains which rise abruptly to the east of the Site with peak elevations greater than 11,000 feet less than 4 miles from the site. Elevations range from approximately 5,150 to 5,230 feet across the Site. The primary surface water feature near the property is the Little Cottonwood Creek. Most areas are predominantly natural vegetation and exposed soils. The climate of the foothills of the Wasatch Mountain Range (including the Site area) varies according to time of year. Summer months are usually hot and dry with limited precipitation. The entire area is subject to severe and persistent inversion patterns, and dust storms are common to the area.

This Removal Action addresses the OU3 area defined as approximately 34 acres of undeveloped non-residential land located to the west of Little Cottonwood Canyon Road within which is situated one residential dwelling. OU3 is the portion of the Site subject to, and designated solely for the purposes of the Agreement with LCP. OU3 was formerly a part of OU2 and is located primarily to the north of the location of the former Flagstaff Smelter, with the remnants of that smelter lying in the southern portion of OU3.

3. Site characteristics

The area surrounding the Site consists of affluent single-family homes, one of Salt Lake County's premier restaurants, and nonresidential property. As stated in the ROD, "Due to its proximity to the canyon and the extensive natural vegetation, the area is prime for growth and residential development."

LCP plans to conduct this Removal Action and redevelop this property into residential properties and public-accessible open space lands, including preservation of the existing watershed values. One existing residence (F05) is contaminated and located within the removal area (OU3). LCP will remove lead and arsenic contaminated soil on this property as part of the proposed Removal Action.

Under the proposed final land use, residential development will consist of 39 single family homes on lot sizes ranging from approximately 0.33 acres to 3.5 acres. Open space lands will generally consist of undeveloped lands, watershed, and habitat protection.

4. **Release or threatened release into the environment of a hazardous substance, or pollutant or contaminant**

Arsenic and lead (but particularly lead) have been identified at the Site as the contaminants of concern (COCs). Arsenic and lead are hazardous substances, as defined by Section 101 (14) of CERCLA. These hazardous substances appear to have been released by historic smeltering activities into the areas to be developed into residential properties. The properties included in this Non-Time Critical Removal Action Memorandum contain high levels of lead and arsenic, and leachable lead. The threat posed by this Site is the inadvertent ingestion and inhalation of highly contaminated soil and dust as well as the continued migration of contaminants through wind, surface water, and leaching into groundwater.

Based on the *Site Characterization Report – Little Cottonwood Canyon Property* (RMC, 2004), soils in the immediate vicinity of the historic Flagstaff Smelter contain lead concentrations exceeding 50,000 mg/kg at various depths. (See Figures 1-4, attached) North of the smelter location, the depth of contamination ranges from less than 12 inches in an area that was previously farmed (Zone 2, Figure 2) to less than 6 inches in the undisturbed area (Zone 4, Figure 2). The degree of total lead and arsenic contamination, as well as the principle-threat-waste, generally decreases in proportion to the distance from the historic smelter location and is randomly distributed across the OU3 area. Based on previous studies, arsenic concentrations generally tend to be proportionately consistent with lead concentrations.

Summary of Contamination and Removal Soil Volume Estimate - *Removal Action Work Plan for Little Cottonwood Canyon Partners – October 2005 (final).*

Zone (surface/subsurface contamination)	**Lead Conc. (mg/kg)**	**Volume (Tons)**	**Removal Depth (in.)**
Zone 1	215,859	12,303	12
Zone 2	24,691	23,854	12
Zone 3	16,294	1,173	6
Zone 4	7,290	15,662	6
Total		**52,991**	

Similarly, the RI found within OU1 that lead concentrations in soil ranged from 6 to 123,000 mg/kg and arsenic concentrations in soils ranged from <5 to 7,090 mg/kg. Some properties, which lie on top of the former Davenport smelter, contain the principle-threat waste with concentrations of lead (> 163,786 mg/kg) and arsenic (>20,409 mg/kg) far exceeding the action levels. Also, lead TCLP results in the vicinity of the former Davenport Smelter, where the slag and the principle-threat-waste are located, range from 15 mg/L to 989 mg/L.

5. NPL Status

The Hazardous Ranking package was completed on September 21, 2000 disclosing the severity of the potential release on the Site. The Site was placed on the National Priorities List (NPL) on April 30, 2003.

B. Other Actions to Date

1. Previous Actions

Because of the elevated levels of contamination, EPA conducted a Time-Critical Removal Action (TCRA) to address ROU properties located on and near the former Davenport smelter, which contained extremely high concentrations of lead and arsenic and leachable lead constituting principle-threat waste. The TCRA for this portion of OU1 was signed on April 22, 2004. A total of 6 properties were cleaned-up under this TCRA.

EPA expanded the removal action to the remaining residential properties within ROU with the signing of a Non-Time Critical Removal Action decision document on May 26, 2005.

Since the issuance of the ROD in 2002, LCP initiated an effort to rezone 118 acres for the purposes of developing the area into single-dwelling homes. The area was successfully rezoned with unanimous approval by the Salt Lake County Commissioners on September 7, 2004. LCP contracted with Resource Management Consultants to collect additional data from OU3 to further characterize the nature and extent of contamination. The resulting *Site Characterization Report – Little Cottonwood Canyon Property* (RMC, 2004) was submitted to EPA and UDEQ in the fall of 2004. In their interest to develop the area and as a requirement of the Agreement, LCP submitted a *Removal Action Work Plan for Little Cottonwood Canyon Partners* (REMC, 2005) that describes how the components of the NTCRA-OU3 memorandum will be implemented by LCP during the development of OU3.

2. Current Actions

The NTCRA-OU1 memorandum describes past and future actions for OU1 and OU2. A Work Plan describing how LCP will implement this Action Memo and the Statement of Work (Exhibit 3 to the Agreement). The Work Plan is a component of the Agreement between LCP and EPA that will ensure that the OU3 contamination is properly addressed. The removal activities, which will be overseen by EPA and UDEQ, are anticipated to commence in late October to early November 2005 depending upon favorable weather and the final closing date for purchase of the property. The Agreement requires LCP to perform the cleanup and to set aside funds for EPA to take over the work if LCP doesn't complete the cleanup.

C. State and Local Authorities' Roles

UDEQ is actively involved at the NPL Site; and UDEQ has asked EPA's participation in the evaluation and removal of the contaminated material. UDEQ has assigned a project manager who is fully engaged in the design and implementation of the investigations and the actions proposed herein. The Salt Lake County Health Department is aware of and supports the NTCRA for OU3. Neither State nor local agencies have the needed resources to conduct the long-term clean-ups independently.

III. THREATS TO PUBLIC HEALTH OR WELFARE, THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES

In determining the appropriateness of this removal action, the factors set out in 40 C.F.R Section 300.415(b) (2) were considered and the partial list of appropriate removal actions as defined in 40 C.F.R Section 300.415(e) were used as guidance.

A. Threats to Public Health or Welfare

Conditions at the Site meet the criteria for initiating a Removal Action under 40 C.F.R. Section 300.415 (b) (2) of the National Contingency Plan (NCP). The following factors from Section 300.415 (b) (2) of the NCP form the basis for the EPA's determination of the threat presented and the appropriate action to be taken:

300.415(b) (2) (i)	Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants;
300.415(b) (2) (iv)	High levels of hazardous substances or pollutants and contaminants in soils largely at or near the surface, that may migrate;
300.415(b) (2) (v)	Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released; and
300.415(b) (2) (viii)	The (lack of) availability of other appropriate federal or state mechanism to respond to the release;

In reviewing the data, EPA has concluded that there is a significant potential for continued lead and arsenic exposure to human populations at the Site. Threats to human health and selection of health protection action levels are described in detail in the Remedial Investigation, Baseline Risk Assessment, and 2002 Record of Decision for ROU (all of which have been referenced previously).

Arsenic is a hazardous substance as defined by Section 101(14) of CERCLA and is a confirmed human carcinogen, producing tumors in the liver and renal system. It is also poisonous by subcutaneous, intramuscular, and intraperitoneal routes. At lower doses ingestion will induce adverse systemic skin and gastrointestinal effects. It is also classified as an experimental teratogen. Inorganic forms of arsenic, such as those found

at the Site, are more toxic than organic forms in both acute and chronic exposures. Large doses of arsenic may be acutely fatal. Symptoms include fever, loss of appetite, enlarged liver, and heart rhythm abnormalities. Sensory loss in the peripheral nervous system may also occur. Chronic exposure to arsenic generally results in skin lesions, liver injury, and peripheral vascular disease. The peripheral vascular disease may progress to endarteritis obliterans and gangrene of the lower extremities (blackfoot disease). Arsenic is a human carcinogen based on observation of increased lung cancer mortality due to inhalation exposure and increased skin cancer in individuals exposed to arsenic via drinking water.

Lead is classified as a B2 carcinogen by EPA. This classification is the result of animal studies determining that these compounds are probable human carcinogens. Lead can enter the body via ingestion and inhalation. Children appear to be the segment of the population at greatest risk from toxic effects of lead. Initially, lead travels in the blood to the soft tissues (heart, liver, kidney, brain, etc.), then it gradually redistributes to the bones and teeth where it tends to remain. The most serious effects associated with markedly elevated blood lead levels include neurotoxic effects such as irreversible brain damage. Children have exhibited nerve damage, permanent mental retardation, colic, anemia, brain damage, and death.

Source contamination is located within the OU3 boundaries as the Flagstaff Smelter facility, itself, was located on the southeast portion of the area. In addition, migration of lead and arsenic in the soils is potentially transported through air-borne mechanisms and run-off during significant precipitation events. The hotter temperatures and dry weather typical in the summer months in the Cottonwood area will contribute to the migration of air-borne dust containing elevated concentrations of lead and arsenic. In the spring time, snow melt, rainfall, or other forms of run-off inducing events have the potential to spread the contamination further, including the areas that are being cleaned-up under fund-lead Removal Action. Furthermore, because of the mountain topography of the area, this Removal Action area is subject to high winds and persistent inversion patterns, so entrained air-borne contaminants remain in the area for longer periods of time.

Exposure to the lead and arsenic occurs as access to the area is unrestricted. Adults and children have been observed hiking and engaging in off-road vehicle activities (e.g. RVs, motorcycles, bicycles, et. al.). The State and locals (i.e., the State of Utah, the Granite Community Council), the Salt Lake County, and the Cottonwood Heights Community Council have expressed concerns about the potential for continued migration of air-borne dust, containing elevated lead and arsenic, from the Site to the nearby population including properties presently being cleaned-up under a Non-Time Critical Removal Action (OU1).

B. Threats to the Environment

The primary threat identified is exposure to human populations. Pets, and to a lesser degree wildlife, could be affected as they come into direct contact with the contamination within the undeveloped area and within residential areas. Wildlife and domesticated animals in adjacent habitats may be exposed to on-site contamination either through direct contact with contaminated soil, flowing and standing water, and sediments, or directly through consumption of organism (algae, aquatic insects, or animals) feeding in the area. Toxic metals-contaminated water may have a potential to overflow and migrate to wetlands, agricultural lands, residences and other recreational areas which are down-gradient from the Site.

C. Relevant Factors in Selecting Removal Authority

Cleanup of OU3 is best accomplished with a NTCRA. The NCP requires at 40 C.F.R. Section 300.415(b) (4) (i) that where a planning period of at least six months is available, an engineering evaluation/cost analysis (EE/CA) or its equivalent is required. For the residential portion of the Site, ROU or OU1, a full RI/FS, human health risk assessment (HHRA), and ROD have already been completed. An Explanation of Significant Differences (ESD) for the OU1 ROD extended the analysis, applied appropriate cleanup levels, and made remedy conclusions to the residential development planned for OU3. Given the thorough technical analysis and public participation already accomplished for the residential portions of the Site, EPA Region 8 finds that the OU1 RI/FS, HHRA, and ROD are at least equivalent to an EE/CA and meet the NCP requirements for a non-time critical removal action.

EPA Region 8 has carefully considered the factors applicable to removal actions as set out in 40 C.F.R. Section 300.415(b) (2) and additional factors for employing removal authorities defined in *the Superfund Response Action Memorandum: "Use of Non-Time Critical Removal Authority" - Feb. 14, 2000.* As a result, the Agency, with concurrence with UDEQ, has decided that the use of non-time critical removal action is best suited to address the imminent threats posed at OU3. In addition to considering Section 300.415(b) (2), EPA has also considered other relevant factors (as described in details in the Section V- Proposed Action) for this Non-Time Critical Removal Action:

- Time-sensitivity of the relatively prompt response
- The complexity and the actions to be taken
- The comprehensiveness of the proposed action.
- The likely cost of the action

IV. ENDANGERMENT DETERMINATION

The actual or threatened releases of hazardous substances from this Site, if not addressed by implementing the response action selected in this Action Memorandum, may present an imminent and substantial endangerment to public health or welfare or the environment.

VI. PROPOSED ACTIONS

A. Proposed Action

1. Proposed action description

LCP will conduct the removal action and redevelop the contaminated property into residential, public parks and open space uses. The clean-up action levels and requirements are consistent with the ROD for the ROU (OU1) (September 2002), –the TCRA Memorandum (April 22, 2004), and the NTCRA-OU1 Memorandum (May 26, 2005). The primary activity of this Removal Action consists of the excavation of approximately 43,000 cubic yards of contaminated soil (exceeding 600 mg/Kg of total lead and 126 mg/Kg of total arsenic), on-site treatment of soils exceeding 5 mg/L of extractable lead, and disposal of the contaminated and treated soil at a pre-approved repository. LCP has submitted a detailed Work Plan for approval which will become part of the Agreement. EPA and UDEQ will oversee all removal activities. All of EPA's oversight costs (and those incurred by UDEQ pursuant to a cooperative agreement with EPA) will be reimbursed by LCP in accordance with the Agreement.

Generally, the work plan will include:

Soil Excavation:

- Excavation of contaminated soil;
- Consolidation of contaminated soils at a staging area for treatment and disposal at an appropriate facility;
- Transportation, on-site treatment of excavated soil exceeding 5 mg/L of extractable lead (to meet land disposal requirements), and disposal of characteristically hazardous soil at a suitable or pre-approved Subtitle C landfill for characteristically hazardous soil or Subtitle D landfill for non-hazardous soil; and,
- Development and implementation of institutional controls for any contamination left in place.

Engineering controls, sampling, and air monitoring will be implemented.

2. Contribution to remedial performance

This Non-Time Critical Removal Action will mitigate potential health risks to humans in OU3. The cleanup actions are consistent with the remedy selected in the ROD and meet the same Remedial Actions Objectives (RAOs) as follows:

- Reducing risks from exposure to lead-contaminated soil such that no child under the age of seven has more than a 5% chance of exceeding a blood lead level of 10 milligrams of lead per deciliter of blood
- Reducing risks from exposure to arsenic-contaminated soil such that no person has greater than a 10^{-4} increased risk of contracting cancer from contaminated soil
- Remediating soils to levels that allow continued residential use
- Preventing the occurrence and spread of windblown contamination

3. Description of alternative technologies

As described in the ESD, the alternatives screened and evaluated in the FFS are presumptive remedies appropriate for OU3 as the contaminants, concentration of contaminants, source of contaminants, media, exposure pathways, migration, and risks are similar to those within the ROU. The FFS screened and evaluated different technologies and developed two remedial alternatives, in addition to "no action:" 1) excavation and offsite disposal, and 2) excavation of contaminated soil under non-native vegetation and soil cover around native vegetation. Alternative #2 was selected by EPA and UDEQ in the ROD for the ROU (OU1).

This response action differs from ROD Alternative #2 in that no careful hand-excavation around native vegetation is planned since the new residential area created after the removal is complete will be developed with its own slope stabilization and landscaping plans. In addition, a clean, imported soil layer will not be deposited to bring the excavated surface to the pre-existing grade. The grading plan designed for the planned unit development will not interfere with the removal plan to reduce the risk presented by the presence of lead- and arsenic-contaminated soils near the surface. At the completion of the removal, all known contamination, and any additional contamination encountered during removal or found with test pits, will be excavated, stabilized, and sent offsite for disposal.

EPA is using a soil treatment option for soils that exceed 5 mg/L extractable lead as described earlier and successfully used during the time critical removal action.. For the off-site disposal option (RCRA hazardous waste vs. non-hazardous waste), an in-situ treatment study was conducted in April 2004. The RCRA contaminated soil has been successfully treated with TSP (phosphate compound) and disposed as non-hazardous waste at the Salt Lake Valley Solid Waste Landfill. Basically, the treatment of the principle threat waste soil was involved with a two-step in-situ process - 1) application of 2% (TSP) on the surface area prior to excavation; 2) mixing an additional 1-2% (TSP) to the stockpiles prior to disposal. This new treatment technique reduces the material-handling time and cleanup costs.

4. **Engineering Evaluation/Cost Analysis (EE/CA)**

RI/FS is functional equivalent of the EE/CA:

Where a planning period of at least six month exists, the NCP establishes important additional requirements for the use of removal authority. 40 C.F.R. Section 300.415(b) (4) and (n) (4) require the development of an Engineering Evaluation/Cost Analysis (EE/CA) with public participation. The goals of the EE/CA are to identify the objectives of the removal action and to analyze the various alternatives that may be used to satisfy these objectives for cost, effectiveness, and implementability. As stated in the *Guidance on Conducting Non-Time Critical Removal Actions under CERCLA* (August 1993, OSWER 9360.0-32), "…. An EE/CA is similar to, but less comprehensive than, the RI/FS conducted for remedial actions." The EPA Region 8 Removal and Remedial Programs, after consultation with the UDEQ, determined that the RI/FS and community involvement proceedings previously developed and conducted for OU1 were substantially equivalent to requirements for a non-time critical removal action for OU3 and that there was no need to perform an EE/CA or conduct additional community meetings.

The Focused Feasibility Study Report (FFS) (URSGWC, 2001) for the ROU (now referred to as OU1) was completed in December 2001. Three alternatives were evaluated against seven of the nine criteria described in the NCP. The remaining two criteria, State acceptance and community acceptance, were evaluated through the public process associated with the Proposed Plan.

The alternatives selected for detailed evaluation in the FFS were:

Alternative 1 – No action;
Alternative 2 – Excavation and offsite disposal; and
Alternative 3 – Excavation of contaminated soil under non-native vegetation and soil cover around native vegetation.

Explanation of Significant Differences to the ROD (also see Attachment 3):

At the time of the ROD, developed in September 2002, the NPL Site had been divided into two operable units: 1) A residential operable unit (ROU) that covered residential properties with lead and arsenic contamination from the historic smelting operations, and 2) A non-residential operable unit (NROU), now referred to as OU2, that covers the non-residential properties that have been impacted by the smelters. Now, a portion of the OU2 is going to be developed into residential properties (OU3). Therefore, the Explanation of Significant Differences is issued for the following reasons:

- To provide the public with an explanation of the nature of the changes to the remedy;
- To summarize the circumstances that led to the changes to the remedy;
- To affirm that the revised remedy complies with all statutory requirements.

Sections 117(c) and 121 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (Superfund), as amended, 42 U.S.C. Section 9601, et seq., and the regulations at 40 C.F.R. Section 300.435(c) (2) (i), require the development of an ESD to reference the modification to the selected remedy described in the ROD. The ESD does not alter the selected remedy in any fundamental aspect regarding primary treatment method and changes in remedy from containment to treatment. The ESD recognizes the FFS as the functional equivalent of an EE/CA for OU3. The remedy for the Davenport and Flagstaff Smelters Superfund Site remains protective of human health and the environment.

Description of the ROD (2002):

Four Remedial Action Objectives (RAOs) were derived from the risk quantified in the BLRA:

- Reducing risks from exposure to lead-contaminated soil such that no child under the age of seven has more than a 5 percent chance of exceeding a blood lead level of 10 micrograms of lead per deciliter of blood.
- Reducing risks from exposure to arsenic-contaminated soil such that no person has greater than a 10^{-4} increased risk of contracting cancer from contaminated soil.
- Remediating soils to levels that allow continued residential use.
- Preventing the occurrence and spread of windblown contamination.

The clean-up levels were arrived at through the use of health-based goals. The established action level of 600 mg/kg for lead was based upon preventing exposure to a child such that no child under the age of seven has more than a 5 percent chance of exceeding a blood lead concentration of 10 micrograms of lead per deciliter of blood. The arsenic action level of 126 mg/kg was derived from a target cancer risk level of 10^{-4}.

Description of the ESD

The ESD addresses the area, within the Davenport and Flagstaff Smelters Superfund Site, targeted by LCP for development of residential properties. The cleanup standards that are being applied, shall be applied to potentially developable residential properties as these components were uniquely designed to protect residents from unacceptable health risks posed by contaminants from smelting activities of the historic Davenport and Flagstaff Smelters.

Significant Differences to the Remedy

The ESD recognizes the impending development of approximately 36 acres within the Davenport and Flagstaff Smelters Superfund Site into residential properties. Existing residential areas are specifically addressed in the *ROU ROD* (EPA, 2002). Although this area was zoned for residential use, the ROD did not include this area because it was undeveloped, there were no interested developers at the time of the ROD, and there were no currently exposed populations. There is one home located within the OU3 that was identified as part of OU1 and is identified as the property located at 3529 North Little Cottonwood Road (i.e., F-05).

5. ARARs

This Enforcement Removal Action will attain, to the extent practicable, considering the exigencies of the situation, all applicable or relevant and appropriate (ARARs) Federal, State or local standards, criteria or regulations. NTCRA Memo for OU1 (attachment 2) and the ROD contain a detailed analysis of the ARARs.

B. Project Schedule

It is anticipated that the preparation work can be initiated immediately after the Agreement with LCP has been reached, but restoration work may continue into 2006.

VI. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

If no removal action is taken at the Site or if the action is delayed, potential residents in the area would be exposed to high levels of lead and arsenic. The preliminary assessments indicate, based on the concentrations of lead and arsenic measured in the soil, that the contaminated soil at this Site may pose an acute or short-term health risk to the residents.

VII. OUTSTANDING POLICY ISSUES

None

VIII. ENFORCEMENT

A confidential summary of the enforcement actions has been prepared under separate cover.

IX. RECOMMENDATION

This decision document represents the selected Enforcement Removal Action for OU3 of the Davenport and Flagstaff NPL Site, located in Salt Lake County, Utah developed in accordance with CERCLA, as amended, and not inconsistent with the NCP. This decision is based on the administrative record for the Site. Conditions at the Site meet the NCP §300.415 (b) (2) criteria for a removal. I recommend your approval of the proposed Enforcement Removal Action.

Approve: _____ Date: 11/15/05

Max H. Dodson
Assistant Regional Administrator
Office of Ecosystems Protection
and Remediation

Disapprove: _____ Date:

Max H. Dodson
Assistant Regional Administrator
Office of Ecosystems Protection
and Remediation

Attachments:

Attachment 1:	Approved Time Critical Removal Action Memorandum (April 22, 2004).
Attachment 2:	Approved Non-Time Critical Removal Action Memorandum (May 26, 2005)
Attachment 3:	Explanation of Significant Differences
Exhibit 1:	The Davenport and Flagstaff Smelters NPL Site May with Operable Units
Exhibit 2:	OU3 Map with Removal Zones
Figures 1 - 4:	Surface Sample Locations and Results

SUPPLEMENTAL DOCUMENTS

Support/reference documents which may be helpful to the reader and/or have been cited in the report may be found in the Administrative Record File at the Superfund Records Center for Region VIII EPA, 999 18th Street, Denver, Colorado 80202.

Attachment 1

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8
999 18TH STREET - SUITE 300
DENVER, CO 80202-2466

Ref: 8EPR-ER

APR 22 2004

ACTION MEMORANDUM

SUBJECT: Request for a Time-Critical Removal Action and Exemption from the 12-month and $2 million statutory limits at the Davenport and Flagstaff Smelters NPL Site Residential Operable Unit in a residential area at the mouth of Little Cottonwood Canyon, approximately 15 miles southeast of Salt Lake City in Salt Lake County, Utah.

FROM: Duc Nguyen, On-Scene Coordinator
Emergency Response Team

THROUGH: Steve Hawthorn, Supervisor
Emergency Response Unit

Douglas M. Skie, Director
Preparedness, Assessment & Emergency Response Program

TO: Max Dodson, Assistant Regional Administrator
Office of Ecosystems Protection & Remediation

Site ID#:	082M
NPL Site ID#:	UTD988075719
Category of Removal:	Time-Critical, Fund-Lead

I. PURPOSE

The purpose of this Action Memorandum is to request and document approval of a combined initial Time-Critical Removal Action ("Removal Action"), and an exemption from the 12-month and $2 million statutory limits, for the proposed Removal Action described herein. The Removal Action addresses a minimum of four of the 20 contaminated residential properties within the area and will involve excavation of surface and subsurface soils containing extremely elevated levels of leachable lead and arsenic including the principle-threat waste (soils with total lead and arsenic concentrations that fail the Toxicity Characteristic Leaching Procedure [TCLP]). The referenced properties are situated at the location of the former Davenport Smelter, within the Davenport and Flagstaff Smelters Superfund Site Residential Operable Unit (ROU). The conditions at this Site meet the emergency criteria for exemption from the statutory limits on a removal action.

The proposed Removal Action will address most critical immediate threats identified during the Environmental Protection Agency's (EPA) and Utah Department of Environmental Quality's (UDEQ) sampling events which occurred from 1992 to present. Since the Site has not been funded for Remedial Action, but there appear to be other on-going time critical threats of contamination, there will likely be an Amendment to this memorandum which includes more identified properties with similar conditions for subsequent Removal Action(s). In addition, the subsequent sampling, analysis and evaluation may identify additional time critical threats at the Site.

II. SITE CONDITIONS AND BACKGROUND

A. Site Description

1. Physical Location

The Davenport and Flagstaff Smelter's Superfund Site is located in the foothills of the Wasatch Mountains in a residential area at the mouth of Little Cottonwood Canyon, approximately 15 miles southeast of Salt Lake City (population of 833,840), and one mile east of Sandy City (population of 96,310), Utah. The Site is located within the southwest quarter of the northwest quarter of Section 12, Township 3 South, Range 1 East, Salt Lake base and Meridian (See Figure 1 attached). The former Flagstaff Smelter was located on the north side of Little Cottonwood Creek, and the former Davenport Smelter was located on the opposite side of the creek approximately 1/4 mile south of the Flagstaff Smelter.

2. Site Characteristics

Currently, within the ROU, there are: approximately 50 single-family homes on lots ranging from 1/4 to 1-acre in size with values from $500K to several million dollars; a commercial restaurant; and a condominium development. The Wasatch Mountains rise abruptly to the east with peaks greater than 11,000 feet less than 4 miles from the Site. Landscaping in the area is generally elaborate and professionally well maintained. Three major roads are in the vicinity of the Site - Little Cottonwood Canyon Road, North Little Cottonwood Canyon Road, and Wasatch Boulevard. The boundaries of the ROU are defined as residential parcels within the known extent of the area impacted from the smelters. The four properties that are the subject of this time-critical Removal Action are located within the southern portion of the ROU (See Figure 2 - 6 attached).

The Site is geologically situated near a transitional boundary between the bedrock of the mountains and unconsolidated valley fill. The consolidated rocks of the Wasatch Range above the Site consist of Precambrian quartzite, shale, and

Tertiary quartz monzonite. Glacial moraines, talus, and lacustrine deposits are present along the valley margin. The annual average precipitation is 24.30 inches per year.

The primary surface water at the Site is Little Cottonwood Creek. It is a perennial stream near the town of Alta at the head of Little Cottonwood Canyon. The creek flows west and eventually discharges into the Jordan River in the Salt Lake Valley.

3. Removal Site Evaluation

The Davenport and Flagstaff Smelters Superfund Site (Residential Operable Unit): The former Davenport and Flagstaff smelters were active during the early-to-mid 1870's and processed lead and copper ores derived from the mines in the Alta, Utah, area. The smelting process involved the crushing and melting of sulfide ore in order to concentrate the desired metals. The main distribution mechanisms for lead and arsenic contamination likely were from the settling of flue ash at the time of smelting, wind blown dust at the time of crushing, and ongoing leaching from slag (by-product) and concentrated tailings. Both smelters were decommissioned and dismantled by 1879. The discovery of ladle casts in Little Cottonwood Creek near the Flagstaff Smelter location in 1991 in part prompted a study of historic smelter sites of the Salt Lake Valley. The smelter areas were placed into the CERCLA Information System (CERCLIS) in April 1992 as Davenport Smelter under the alias Little Cottonwood Smelters and eventually were listed on both CERCLIS and the National Priorities List (NPL) as Davenport and Flagstaff Smelters.

During investigations performed in 1992 by EPA, and in 1994 by UDEQ, elevated concentrations of arsenic and leads were detected in the soil at the Site and the Site was divided into the Flagstaff and Davenport portions. UDEQ conducted additional sampling activities in June of 1994 to determine the dispersion potential of the soil contaminants through air, surface water, or groundwater pathways away from the source areas. The possibility of release of contaminated soil to surface water, groundwater, and air was determined to be likely due to the conditions in the area - i.e., surface water in close proximity, groundwater recharge zone, and air dispersion by windblown dust. The results of these focused Site Inspections are presented in *Analytical Results Report - Davenport Smelter* (UDEQ, 1995a) and in Attachment 2.

In 1998, a Site Characterization of the residential areas near the Davenport Smelter portion of the Site was performed. The scope of this investigation is described in detail in a document entitled *Final Quality Assurance Project Plan for Davenport and Flagstaff Smelter Site Characterization Study, Salt Lake City, Utah* (SAIC, 1998). Site Characterization results were reported in the *Final Site Characterization for Davenport and Flagstaff Smelters Residential Area* (SAIC, 2000); lead and arsenic concentrations well above the EPA risk-based screening levels were identified in the residential areas surrounding the Davenport Smelter.

A Baseline Risk Assessment was performed for the Davenport Smelter portion of the Site by EPA as part of the Site Characterization to determine if risks to human health associated with the contamination identified in previous investigations were sufficient to warrant remediation. *The action levels established for the Site are 600 milligrams/kilograms (mg/kg) for total lead and 126 mg/kg for total arsenic in the residential soils.*

A Remedial Investigation (RI) was performed in January 1999 to further characterize contaminated soils at residential properties surrounding the two smelters. Surface and subsurface sampling was conducted in order to fill data gaps and to provide additional information to be used for evaluating remedial alternatives. Sampling was also performed to define the vertical extent of contamination and to obtain (TCLP) data to determine disposal options. The RI found that lead concentrations in soils ranged from 6 to 123,000 mg/kg and arsenic from 5 to 7,090 mg/kg. The results of the TCLP analysis indicated that lead in the soil at the Site is leachable. A number of surface and subsurface soil samples exceeded the lead criteria for characteristic hazardous waste (5 milligrams/Liter [mg/L]). The RI recommended that remediation of all residential properties with surface and/or subsurface lead and arsenic concentrations greater than the action levels established for the Site be addressed in a Focused Feasibility Study (FFS).

The FFS screened different technologies and developed two remedial alternatives, in addition to "no action": 1) excavation and offsite disposal; and 2) excavation of contaminated soil under non-native vegetation and soil cover around native vegetation.

The RI and FFS, as detailed above, were used by EPA to develop a Record of Decision (ROD) for the ROU, which was signed by EPA on September 29,2002, concurred upon by UDEQ on October 4, 2002. Since that time, EPA and UDEQ have contracted with URS Corporation (URS) to conduct a Pre-Remedial Design sampling for the ROU at the Sites. The Report of Findings was completed on November 12, 2003, and illustrated with the following maps and analytical data: 1) vertical and spatial distribution of lead and arsenic; 2) areas to be excavated (e.g., containing concentrations greater than the action level); and 3) calculations of excavation volumes (43,000 tons of contaminated soils).

ROU (Time-Critical Removal): Because there are residential properties which lie on top of the former Davenport smelter and contain concentrations of lead and arsenic far exceeding the action level, EPA Region 8 has determined to address these areas under a "time-critical" Removal Action. The visible "olive silty" soil, found distinctively at these properties, is considered a principle-threat waste. Principle-threat wastes are source materials that are considered highly toxic or highly mobile, that generally cannot be reliably contained, or would present a significant risk to human health or the environment should exposure occur. In addition, high lead and arsenic levels on properties adjacent to the former Flagstaff smelter with visible characteristics may also be indicative of the presence of principle-threat waste.

A summary of the vertical contamination in conjunction with leachable characteristics on four of the potential residences that are subject to this Time-Critical Removal Action is presented below.

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Summary of "highest values of contamination" from Report of Findings for Pre-Remedial Design Sampling - November 2003:

Residence	Sample Depth (inches)	Total Lead (mg/Kg)	TCLP Lead (mg/L)	Total Arsenic (mg/Kg)	TCLP Arsenic (mg/L)
3515 E. Little Cottonwood Lane	0-6 6-12 12-18	21,900 33,900 99,500	90 142 247	740 740 3,070	<5
3594 E. Little Cottonwood Lane	0-6 6-12 12-18 30-36	123,000 13,400 19,100 1,330	196 26 146 32	5,822 1,805 1,063 140	<5
9756 Old Ranch Place	0-6 6-12 12-18 18-24 24-30 30-36	17,400 46,900 47,700 27,800 19,700 8,730	109 782 989 463 220 88	2,000 2,820 1,450 3,310 1,810 1,010	<5
9808 E. Little Cottonwood Lane	6-12	1,720	15	550	<5

****

In general, highly leachable lead was detected in both surface and subsurface soil samples, and TCLP concentrations appeared to increase with depth to the 12-24" interval, then decreased in concentrations with depth to the 30-36" intervals. For total lead, some zones have extremely high concentrations and these zones appear to be randomly distributed across these four properties. Lead and arsenic contamination is known to extend at least 36 inches below ground surface; however, the vertical extent of contamination has not been defined deeper than 36" below ground surface.

4. Release or Threatened Release Into The Environment of a Hazardous Substance, or Pollutant or Contaminant.

Arsenic and lead (but particularly lead) have been identified at the Site as the contaminants of concern (COCs). Arsenic and lead are hazardous substances, as defined by Section 101 (14) of CERCLA. These hazardous substances appear to have been released into the residential soils by historic smeltering activities and

spread downgradiant into what is now a residential area. The four properties included in this Removal Action Memorandum contain unusually high levels of lead and arsenic which also are highly leachable. The threats posed by this Site include dermal absorption; ingestion of potentially contaminated plants and fish; and the inadvertent ingestion of contaminated soil and surface water.

Below are brief summaries of the toxicological effects of lead and arsenic:

Lead

Lead is classified as a B2 carcinogen by EPA. This classification is the result of adequate animal studies determining that these compounds are probable human carcinogens. Lead can enter the body via ingestion and inhalation. Children appear to be the segment of the population at greatest risk from toxic effects of lead. Initially, lead travels in the blood to the soft tissues (heart, liver, kidney, brain, etc.), then it gradually redistributes to the bones and teeth where it tends to remain. Children exposed to high levels of lead have exhibited nerve damage, permanent mental retardation, colic, anemia, brain damage, and death.

Arsenic

Arsenic is a confirmed human carcinogen, producing tumors in the liver and renal system. It is also poisonous by subcutaneous, intramuscular, and intraperitoneal routes. At lower doses ingestion will induce adverse systemic skin and gastrointestinal effects. It is also classified as an experimental teratogen. Inorganic forms of arsenic are more toxic than organic forms in both acute and chronic exposures.

5. NPL Status

The Site is listed on the National Priorities List. UDEQ is the lead agency for the Site under a cooperative agreement with the EPA. There are currently two operable units at the Site. The ROU addresses surface and subsurface soil contamination on residential properties in the areas near the locations of the former smelters. The Non-residential Operable Unit (NROU) will investigate and address surface and subsurface soil contamination, surface and groundwater impacts, and ecological risks associated with the undeveloped and non-residential properties surrounding the two smelters.

B. Other Actions to Date

1. Previous Actions

Removal Assessment: In October 2003, In addition to the sampling and other activities which have already been described, EPA and its Superfund Technical Assistance Removal Team (START) personnel conducted further removal assessment activities in October 2003 to collect sufficient information for the property design, surveying, and restoration work. A landscape architect company was also employed to assess individual property landscaping.

2. Current Actions

During the Removal Action, all excavated soils with a TCLP lead level greater than 5 mg/L will be stabilized prior to disposal. The stabilization will reduce both the mobility and the toxicity of the contaminants in the excavated soil. Therefore, a "lab-bench" scale study with different concentrations of chemical agents (physical binding) is being conducted to determine the treatment feasibility, reduction of the mobility of inorganic compounds, and cost effectiveness for the contaminated soil that exhibits a characteristic of hazardous waste (i.e., is greater than 5 mg/L lead) prior to land disposal.

C. State and Local Authorities' Roles

UDEQ is actively involved at this Site and has agreed to EPA's participation in the evaluation and removal of the contaminated material. UDEQ has assigned a project manager who is fully engaged in the design and implementation of the investigations and the actions proposed herein. The Salt Lake County Health Department is aware of the Site and potential Removal Action. At this time there is no funding available to conduct the long-term clean-ups; however, if such funding becomes available the State will remediate at the remaining contaminated properties.

III. THREATS TO PUBLIC HEALTH OR WELFARE, THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES

A. Threats to Public Health or Welfare

Conditions at the Site present an imminent and substantial endangerment to human health and the environment and meet the criteria for initiating a Removal Action under 40 C.F.R. Section 300.415 (b) (2) of the National Contingency Plan (NCP). The following factors from Section 300.415 (b) (2) of the NCP form the basis for the EPA's determination of the threat presented and the appropriate action to be taken:

300.415 (b)(2)(i)	Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants;
300.415 (b)(2)(iv)	High levels of hazardous substances or pollutants or contaminants in soils/surface water largely at or near the surface that may migrate; and

300.415 (b)(2)(v) Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released.

In reviewing the data, EPA has concluded that there is a significant potential for continued lead and arsenic exposure to human populations at the Site. Threats to human health and selection of health protection action levels are described in the RI and ROD.

Arsenic is a hazardous substance as defined by Section 101(14) of CERCLA and is a confirmed human carcinogen, producing tumors in the liver and renal system. It is also poisonous by subcutaneous, intramuscular, and intraperitoneal routes. At lower doses ingestion will induce adverse systemic skin and gastrointestinal effects. It is also classified as an experimental teratogen. Inorganic forms of arsenic, such as those found at the Site, are more toxic than organic forms in both acute and chronic exposures. Large doses of arsenic may be acutely fatal. Symptoms include fever, loss of appetite, enlarged liver, and heart rhythm abnormalities. Sensory loss in the peripheral nervous system may also occur. Chronic exposure to arsenic generally results in skin lesions, liver injury, and peripheral vascular disease. The peripheral vascular disease may progress to endarteritis obliterans and gangrene of the lower extremities (blackfoot disease).. Arsenic is a human carcinogen based on observation of increased lung cancer mortality due to inhalation exposure and increased skin cancer in individuals exposed to arsenic via drinking water.

Lead is classified as a B2 carcinogen by EPA. This classification is the result of animal studies determining that these compounds are probable human carcinogens. Lead can enter the body via ingestion and inhalation. Children appear to be the segment of the population at greatest risk from toxic effects of lead. Initially, lead travels in the blood to the soft tissues (heart, liver, kidney, brain, etc.), then it gradually redistributes to the bones and teeth where it tends to remain. The most serious effects associated with markedly elevated blood lead levels include neurotoxic effects such as irreversible brain damage. Children have exhibited nerve damage, permanent mental retardation, colic, anemia, brain damage, and death.

B. Threats to the Environment

The primary threat identified is exposure to human populations. Pets, and to a lesser degree wildlife, could be affected as they come into direct contact with the contamination within the residential areas.

Wildlife and domesticated animals in adjacent habitats may be exposed to on-site contamination either through direct contact with contaminated soil, flowing and standing water, and sediments, or indirectly through consumption of organisms (algae, aquatic insects, or animals) feeding in the area. Toxic metals- contaminated water with a low pH is present in the surface waters on-site which have a potential to overflow and migrate to wetlands, agricultural land, fishery, residences and other recreational areas which are down-gradient from the Site.

Arsenic may bio-accumulate in aquatic organisms. Arsenic bio-accumulates primarily in algae and lower invertebrates. The embryonic and larval stages of aquatic animals are generally the most sensitive and sediment-feeding organisms will contain higher metal concentration than other organisms.

Lead is ubiquitous in the environment and although bioaccumulation is known to occur, and lead is found in the tissue of many wild animals, including birds, mammals, fishes, and invertebrates, the most publicized effects of lead have been on the impact of ingestion of lead by waterfowl. Acute and chronic lead toxicity have been demonstrated as a definite threat to bird populations. There is also evidence that lead at high concentrations can eliminate populations of bacteria and fungi on leaf surfaces and in soil. Many of the microorganisms play key roles in the decomposer food chain.

IV. ENDANGERMENT DETERMINATION

The actual or threatened releases of hazardous substances from this Site, if not addressed by implementing the response action selected in this Action Memorandum, may present an imminent and substantial endangerment to public health or welfare or the environment.

V. EXEMPTION FROM STATUTORY LIMITS

A. Emergency Exemption:

1. Site conditions meet the criteria set forth in CERCLA Section 104(c)(1)(A).

There is an immediate risk to public health, welfare or the environment at private properties with elevated lead and arsenic concentrations. The Removal Action addresses initially four residential properties, presently identified from the 20 properties which have been evaluated. These four properties are heavily contaminated from smelter waste, and the Removal Action will include excavation of surface and subsurface soils containing extremely elevated levels of total and leachable lead and arsenic, including the principle-threat waste (source materials from mining operations). High concentrations of lead and arsenic have been found in and around the private properties and play areas. With the onset of summer, outdoor activities of children will most likely increase, resulting in increased exposure to high concentrations of contaminated soil on a continuing basis.

Children are the segment of the population at greatest risk from the toxic effects of contaminants because their developing organ systems are intrinsically more sensitive to the effects; their behavioral characteristics (*e.g.*, mouthing behavior and pica) increase contact with dust and soil; and because children absorb lead from the gastrointestinal tract with greater efficiency than adults.

2. An exemption from the 12-month statutory limit on removal actions is necessary at this Site because it is quite likely that not all the work identified in this action memorandum can be completed, given the necessity for revegetation to take place during the growing season. A second field season will be needed to finish backfilling the excavated areas with clean material, finish the revegetation at the properties, and evaluate the vegetation in order to supplement it, where needed. If this request for an exemption from the 12-month and $2 million statutory cap is not granted, the Removal Action and proper reclamation and restoration cannot be fully completed. Children, as well as adults living on the Site, will continue to be exposed to potentially dangerous levels of lead and arsenic that are both tracked inside their homes and remaining in their yards.

3. Assistance from other government agencies is not anticipated at this time because neither the State nor the County has the response or resource capabilities to take any actions at the Site. Consequently, the timely completion of this Removal Action can only be accomplished if this Removal Action with a 12-month and $2 million exemption request is approved.

VI. PROPOSED ACTIONS AND ESTIMATED COSTS

A. Proposed Action

1. Proposed action description

The proposed action includes excavation to a maximum depth of 18", removal, and off-site disposal. For the initial four affected properties, the removal consists of excavating an estimated 5,000 cubic yards of contaminated soil that have total soil-lead concentrations exceeding 600 mg/kg and total arsenic concentrations exceeding 126 mg/kg. Of the 5,000 cubic yards of contaminated soil, 80% of the total is principle-threat waste (source material) which is found at several feet of depth. A 5-acre temporary treatment/staging area and access roads, which will be constructed within the Site boundaries, is being designed for soil treatment and stockpiling of the excavated soil prior to disposal. For cost effectiveness, this temporary staging area will be constructed to fulfill the long-term needs for Remedial Action.

In general, this Removal Action includes the following specific activities:

- Excavation and on-site treatment of contaminated soil;
- Excavation of contaminated soil to a depth of 18" from affected properties;
- Consolidation of contaminated soils at a staging area for treatment and disposal at an appropriate facility. The staging/treatment facility will be constructed for both this Removal Action and potential future Remedial or Removal Actions;

- Transportation and disposal at a suitable or pre-approved Subtitle D landfill of all excavated soils with less than 5 mg/L extractable lead (using TCLP) at the point of generation;
- Transportation, on-site treatment of excavated soil exceeding 5 mg/L of extractable lead (to meet land disposal requirements), and disposal of characteristically hazardous soil at a suitable or pre-approved Subtitle C landfill for characteristically hazardous soil or Subtitle D landfill for non-hazardous soil;
- Placing of clean, imported soil, backfill and a 6-inch topsoil layer over all excavated soil surfaces;
- Removal and replanting of affected non-native vegetation, if suitable;
- Cleaning of the interior of homes on excavated properties to remove interior dust;
- Development and implementation of institutional controls for any contamination left in place on properties;
- Existing concrete, asphalt, brick, stone, or tile surface features (sidewalks, driveways, parking lots, pads, etc.) will remain in place. EPA will generally excavate around such features unless such features are damaged to such an extent that underlying soils, with contaminant levels exceeding the established action levels, are exposed. If the exposed soils exceed the action levels, those soils and the overlying feature will be moved, removed and/or replaced, as appropriate;
- Affected properties will be left in or returned to as close to original condition as possible, and structures and fencing on the properties will be left in place or returned to their original locations if removal is necessary. If fencing cannot be reused, it will be replaced.
- Property owners will receive an assurance that construction and vegetation are warrantied for one year after the construction and landscaping is completed. Existing trees, shrubs, and bushes (defined as low, densely branched plants that impede soil removal) will be removed and replaced with the same or other locally available species, standard nursery stock, and number of plants. Existing Perennial Plants will be removed and replaced with the same (to the extent possible) or similar species, approximate size, and number of plants;
- Property owners will be asked for permission to remediate their properties. If property owners refuse to grant permission, their property(ies) will not be remediated. Detailed plans will be developed with the owners for each property, and owners will be provided copies. The removal schedule will also be provided to the owner. After the removal is completed, each owner will review the "punch list"with the OSC to resolve any outstanding issues.

2. Contribution to remedial performance

A number of remedy alternatives were evaluated for the Site: 1) No Action; 2) Excavation and Off-Site Disposal; and 3) Excavation of Soil Under Non-

Native Vegetation and Soil Cover Around Native Vegetation with Off-Site Disposal. The NCP and Section 121 of CERCLA specify that the selected remedy must be protective of human health and the environment, comply with ARARs - unless ARARs are waived under CERCLA section 121(d)(4) - be cost effective, utilize permanent solutions, and alternative treatment technologies to the maximum extent possible, and show a preference for treatment. Therefore, based on these requirements, EPA-Region 8 and UDEQ have chosen Alternative 2 - Excavation and Off-Site Disposal- as the remedy for the Site as described in Section (VI)(A)(1).

The Time-Critical Removal Action proposed by EPA in this Action Memorandum is also consistent with the long-term remedial action anticipated to be taken at the Site.

3. Description of alternative technologies

An FFS screened different technologies and developed two remedial alternatives, in addition to "no action": 1) excavation and offsite disposal, and 2) excavation of contaminated soil under non-native vegetation and soil cover around native vegetation. Alternative #2 has been selected by EPA and UDEQ with a proposed staging area on the NPL site for this and other contaminated soil from the total area.

4. Engineering Evaluation/Cost Analysis (EE/CA)

Since this is a Time-Critical Removal Action an EE/CA is not required.

5. ARARs

This Removal Action will attain, to the extent practicable, considering the exigencies of the situation, all applicable or relevant and appropriate ("ARARs") Federal, State or local standards, criteria or regulations. Attachment 1 contains a detailed analysis of the ARARs.

6. Project Schedule

The construction portion of this Removal Action is tentatively scheduled to begin in Spring of 2004. Completion of excavations and monitoring of landscape restoration will continue into Spring of 2005.

B. Estimated Costs

EXTRAMURAL COSTS	TASK	COST
Regional Allowance Costs: Cleanup Contractor (ERCS)	Excavation of Contaminated Soil Preparation of Treatment/Staging Facility Transportation and Disposal of Waste Property Restoration	$ 300,000 $ 400,000 $ 300,000 $ 300,000
Other Extramural Costs: START II	Sampling, Design, Surveying, Treatability Study	$ 200,000
Subtotal		$1,500,000
20% Contingency		$ 300,000
Total Extramural		$1,800,000
INTRAMURAL COSTS		
	Direct, Including Travel	$ 100,000
	Indirect	$ 100,000
Total Intramural		$ 200,000
TOTAL		$2,000,000
*Indirect Costs (35%)		$ 700,000

TOTAL ESTIMATED EPA COSTS FOR REMOVAL ACTION $ 2,700,000

*The total EPA costs for this removal action, to be based on full-cost accounting practices, that will be eligible for cost recovery are estimated to be $ 2,700,000. Direct Costs include direct extramural costs and direct intramural costs. Indirect costs are calculated based on an estimated indirect cost rate expressed as a percentage of site-specific direct costs, consistent with the full cost accounting methodology effective October 2, 2000. These estimates do not include pre-judgment interest, do not take into account other enforcement costs, including Department of Justice costs, and may be adjusted during the course of the removal action. The estimates are for illustrative purposes only and their use is not intended to create any rights for responsible parties. Neither the lack of total costs estimates nor deviation of actual costs from this estimate will affect the United States' right to cost recovery.

VII. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

If no removal action is taken at the Site or if the action is delayed, the residents in the area will continue to be exposed to high levels of lead and arsenic. The Preliminary Endangerment Assessment indicates based on the concentrations of lead and arsenic measured in the soil, the contaminated soil at this site may pose an acute or short-term health risk to the residents.

VIII. OUTSTANDING POLICY ISSUES

None

IX. ENFORCEMENT

A separate addendum will provide a confidential summary of current and potential future enforcement actions.

X. RECOMMENDATION

This decision document represents the selected Removal Action for a portion of the Residential Operable Unit of the Davenport and Flagstaff Smelters NPL Site located at the mouth of Little Cottonwood Canyon approximately 15 miles southeast of Salt Lake City in Salt Lake County, Utah, developed in accordance with CERCLA, as amended, and not inconsistent with the NCP. This decision is based on the administrative record for the Site.

Conditions at the Site meet the NCP §300.415 (b) (2) criteria for a removal, and I recommend your approval of the proposed Removal Action. The total project ceiling will be $2,700,000. Of this amount, an estimated $1,800,000 comes from the Regional removal allowance.

Approve: Max H Dodson Date: April 22, 2004

Max H. Dodson
Assistant Regional Administrator
Office of Ecosystems Protection
and Remediation

Disapprove: _____ Date: _____

Max H. Dodson
Assistant Regional Administrator
Office of Ecosystems Protection
and Remediation

Attachments:

Figure 1:	Map of Davenport and Flagstaff Smelters Site
Figure 2, 3, 4 & 5:	Map of Residential Operation Unit
Attachment 1:	ARARs
Attachment 2:	Sample Results

SUPPLEMENTAL DOCUMENTS

Support/reference documents which may be helpful to the reader and/or have been cited in the report may be found in the Administrative Record File at the Superfund Records Center for Region VIII EPA, 999 18th Street, Denver, Colorado 80202.

POTENTIAL ARARs

Attachment #1

CHEMICAL-SPECIFIC ARARs

Standard, Requirement, Criteria, or Limitation	Citation	Applicable or Relevant and Appropriate	Description/Comments
National Drinking Water Standards	40 CFR Part 141, Subpart B pursuant to 42 USC §§ 300g-1 and 300j-9	Applicable	Regulates drinking water quality.
Maximum Contaminant Level Goals	40 CFR Part 141, Subpart F, pursuant to 42 USC § 300g-1	Applicable	Sets goals for contaminants.
National Secondary Drinking Water Standards	40 CFR Part 143, pursuant to 42 USC §§ 300g-1(c) and 300j-9	Applicable	Sets non-enforceable standards for drinking water.
Federal Water Quality Criteria	40 CFR Part 131 Quality Criteria for Water, 1986, pursuant to 33 USC § 1314	Applicable	Sets standards for surface water to protect aquatic life and human health.
Federal Water Pollution Control Act (Storm Water Requirements)	40 CFR Parts 122 and 125, pursuant to 33 USC §§ 1341 and 1344	Applicable	Regulates storm water run-off.
RCRA Groundwater Protection Standards	40 CFR 264.92-264.101	Relevant and Appropriate	Sets standards for groundwater at RCRA facilities.
Clean Air Act, National Primary and Secondary Ambient Air Quality Standards	40 CFR Part 50, National Ambient Air Quality Standards, 40 CFR § 50.6 (PM-10); 40 CFR § 50.12 (lead), pursuant to 42 USC § 7409	Applicable	Sets standards for air emissions.
National Emission Standards for *Hazardous Air Pollutants*	40 CFR Part 61, Subparts N, O, P, pursuant to 42 USC § 7412	Applicable	Regulates emission of hazardous chemicals to the atmosphere.
Utah Air Conservation Act	UCA Title 19, Chapter 2; UAC R307 (Fugitive Emissions and Fugitive Dust Rule UAC R307-12); NAAQS Standards (UAC R307-405); and Visible Emission Standards (UAC R307-201)	Applicable	Regulates emission of hazardous chemicals to the atmosphere.
Interim Guidance on Establishing Soil Lead Cleanup Levels at Superfund Sites	EPA Directive #9355.4-02, September, 1989	TBC	Suggests levels for lead in soil. This guidance has already been considered in establishing the lead cleanup level for contaminated soil.

LOCATION-SPECIFIC ARARs

Standard, Requirement, Criteria, or Limitation	Citation	Applicable or Relevant and Appropriate	Description/Comments
National Historic Preservation Act (NHPA)	16 USC § 470 et seq. A portion of 40 CFR § 6.301 (b), 30 CFR Part 63, Part 65, Part 800	Applicable	Regulates impacts to historic places and structures.
The Historic and Archaeological Data Preservation Act of 1974	16 USC 469 40 CFR § 6.301(c)	Applicable	Protects sites with archeological significance.
Historic Sites Act of 1935, Executive Order 11593	16 USC §§ 461 et seq. 40 CFR § 6.301(a)	Applicable	*Regulates designation and protection of historic places.*
The Archaeological Resources Protection Act of 1979	16 USC §§ 470aa-47011	Applicable	Regulates removal of archeological resources from public or tribal lands.
Executive Order No. 11990 Protection of Wetlands	40 CFR § 6.302(a) and Appendix A	Applicable	Minimizes impacts to wetlands.
Executive Order No. 11988 Floodplain *Management*	40 CFR § 6.302 and Appendix A	Applicable	Regulates construction in floodplains.
Section 404, Clean Water Act (CWA)	33 USC 1251 et seq. 33 CFR Part 330	Applicable	Regulates discharge of dredge or fill materials into water of the U.S.
Fish and Wildlife Coordination Act	16 USC § 661 et seq. 40 CFR § 6.302(g)	Applicable	Requires coordination with Federal and State agencies to provide protection of fish and wildlife.
Utah Aquatic Wildlife Act	UCA Title 23, Chapter 15; UCA 23-15-6	Applicable	Prohibits pollution of waters of State of Utah
Endangered Species Act	16 USC §§ 1531-1543 50 CFR Parts 17, 402 40 CFR § 6.302(b)	Applicable	Regulates the protection of threatened or endangered species.
Wild and Scenic Rivers Act	16 USC §§ 1271-1287 40 CFR § 6.302(e) 36 CFR Part 297	Applicable	Establishes requirements to protect wild, scenic, or recreational rivers.

ACTION-SPECIFIC ARARs

Standard, Requirement, Criteria, or Limitation	Citation	Applicable or Relevant and Appropriate	Description/Comments
Solid Waste Disposal Act as amended by the Resource Conservation and Recovery Act of 1976 (RCRA) Subtitle D	40 CFR Part 257, including Subpart A: § 257.1-1 Floodplains, paragraph (a); § 257.3-7 Air, paragraph (b)	Applicable	Establishes criteria for solid waste disposal facilities and regulates the storage and handling of solid waste.
Occupational Safety and Health Act	29 USC §§ 651-678	Applicable	Regulates worker health and safety.
Utah Ground Water Quality Protection Rules (Utah Code Annot. Title 19,Chapter 5)	UAC R317-6	Applicable	Contamination that remains on-site (either in place or in the on-site repository) must not present a leaching threat to groundwater.
Utah Mined Land Reclamation Act and Rules (Non-Coal Reclamation Rule) (Utah Code Annot. Title 40, Chapter 8)	UAC R643-875	Applicable	Establishes requirements and practices for reclamation of mine sites and mine waste.
Surface Mining Control and Reclamation Act	30 CFR §§ 782 and 816, pursuant to 30 USC §§ 1201 - 1326.	Relevant and Appropriate	Provides requirements for reclamation of mine sites.
RCRA Subtitle C	40 CFR Part 261.4(b)(7) and RCRA Section 3001(b) (Bevill Amendment)	Relevant and Appropriate	Regulates disposal of hazardous materials. Relevant and appropriate for disposal of mine waste is it fails TCLP.
Hazardous Materials Transportation Act	49 USC § 1801-1813, 40 CFR 107, 171-177	Relevant and Appropriate	Regulates the transportation of hazardous waste.
Standards Applicable to Transporters of Hazardous Waste	40 CFR Part 263, pursuant to 42 USC § 6823	Relevant and Appropriate	Regulates the transportation of hazardous waste.

Standard, Requirement, Criteria, or Limitation	Citation	Applicable or Relevant and Appropriate	Description/Comments
Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities and Utah Solid and Hazardous Waste Management Act and Rules, Utah Code Annot. Title 19, Ch. 1, Part 5; Utah Admin. Code R315.	40 CFR Part 264 Subparts B, C, D, E, F, G, K, L, and N, pursuant to 42 USC § 6924, 6925 and UAC R315-8	Relevant and Appropriate	General regulations for the design, operation, and maintenance of hazardous waste treatment, storage and disposal facilities (TSD). May be relevant and appropriate to soil contaminated with mine waste. Relevant provisions include location of temporary waste stockpiles and on-site repository, construction assurance, surface run-on and run-off controls and capping and closure of on-site repository.
Interim Standards for Owners and Operators of New Hazardous Waste Land Disposal Facilities	40 CFR Part 267	Relevant and Appropriate	Establishes requirements for new hazardous waste land disposal facilities.
Guidelines for the Land Disposal of Solid Wastes	40 CFR Part 241, pursuant to 42 USC § 6901, et.seq.	TBC	Regulates the land disposal of solid waste.
Utah Water Appropriations Act	UCA Title 73, Chapter 3	Applicable	Establishes rights to water in the State of Utah.

Attachment 2

MAY 26 2005

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8
999 18TH STREET- SUITE 300
DENVER, CO 80202-2466
Phone 800-227-8917
http://www.epa.gov/region08

Ref: EPR-ER

ACTION MEMORANDUM

SUBJECT: Request for Non-Time-Critical Removal Action at the Davenport and Flagstaff Smelters NPL Site – Residential Operable Unit 1 (OU1) [RV2] located in a residential area at the mouth of Little Cottonwood Canyon, approximately 15 miles southeast of Salt Lake City in Salt Lake County, Utah.

FROM: Duc Nguyen, On-Scene Coordinator (OSC)
Emergency Response Unit

THROUGH: Johanna Miller, Supervisor
Emergency Response Unit

Douglas M. Skie, Director
Preparedness, Assessment & Emergency Response Program

TO: Max H. Dodson, Assistant Regional Administrator
Office of Ecosystems Protection & Remediation

Carol Rushin, Assistant Regional Administrator
Office of Enforcement, Compliance, & Environmental Justice

Site ID#:	082M
NPL Site ID#:	UTD988075719
Category of Removal:	Non-Time Critical, Fund-Lead

I. PURPOSE

The purpose of this Action Memorandum is to request and document approval of a combined Non-Time-Critical Removal Action and an exemption from the 12-month and $2 million statutory limits for the proposed Non-Time-Critical Removal Action described herein for the Davenport and Flagstaff Smelters NPL Site – Residential Operable Unit (OU1) located in Salt Lake County, Utah. This Non-Time Critical Removal Action will continue to mitigate the threats to the local population and environment through excavation of soils containing elevated levels of lead and arsenic from the remaining 14 residential properties – 9 properties at the former Davenport Smelter and 5 properties at the former Flagstaff Smelter. This Removal Action addresses principle-threat waste or mobile source material to include surface soil and subsurface soil containing high concentrations of contaminants of concern that are mobile due to wind

entrainment, surface runoff, or sub-surface transport. For the purposes of this action memo the term principle-threat waste refers to soils with lead and arsenic concentrations that fail the Toxicity Characteristic Leaching Procedure [TCLP].

The remedy remains the same as outlined in the Time-Critical Action Memorandum (April 22, 2004) and the Record of Decision (ROD/September 2002).

The proposed Removal Action will address critical threats identified during the Environmental Protection Agency's (EPA) and Utah Department of Environmental Quality's (UDEQ) sampling events which occurred from 1992 to present. However, several residential areas remained unsampled due to unresolved site access issues and one property owner has denied access for clean up. The State and EPA continue to pursue access for these properties. If access is obtained subsequent sampling, analysis and evaluation may identify additional time critical threats at the Site. Therefore, there may be an Amendment to this memorandum which includes more identified properties with similar conditions for subsequent removal action(s).

The initial Removal Action at the Davenport and Flagstaff Smelters NPL Site (Site) was a Time-Critical (Fund-Lead) Removal Action which was authorized by the Action Memorandum dated April 22, 2004, and included a 12-month and $2 million dollar exemption from the statutory limits (See Attachment 1). Six residential properties which contained extremely elevated levels of leachable lead and arsenic including the principle-threat waste area, were completed in the Davenport Smelter area pursuant to that Action Memorandum.

II. SITE CONDITIONS AND BACKGROUND

The CERCLIS ID number for the Davenport and Flagstaff Smelters NPL Site is UTD988075719. Site conditions are such that this Removal Action is classified as Non-Time Critical. The Action Memorandum dated April 22, 2004 provides the basic description of the Davenport and Flagstaff Smelters NPL Site (See Attachment 1 for additional information).

The Davenport Smelter operated between 1872 to1875 and processed lead ore on a 3.62 acres property using two vertical blast furnaces (SLDT, 1872). The Flagstaff Smelter operated from 1870 to 1873 and processed lead ore for lead, silver, and gold (UDEQ, 1992; SLDT, 1872). The Flagstaff Smelter property was about 14 acres (UDEQ, 1992) and included three vertical blast furnaces (SLDT, 1872). During the smelting process, ore from Little Cottonwood Canyon mines was crushed and melted. Lead, arsenic, and other metals were released into the environment in the form of dust and flue ash (URSGWC, 2001). The Davenport Smelter alone had a capacity of 20 tons of bullion per day (Fabrian, 1873). At the time these smelters were operating, mining practices were relatively inefficient. The United States Commissioner of Mining Statistics at the time estimated that half the lead was "lost in slag, or up the chimney" (USCMS, 1873). "Contaminated ash and dust likely have been subjected to continued erosion, transportation and redeposition since that time [1870s] by wind, surface water run-off, and infiltration of leachate" (URSGWC, 2001).

A. Site Description

The Site has been divided into three operable units: 1) A residential operable unit (OU1) that consists of residential properties located near and on the former Davenport and

Flagstaff Smelters that have lead and arsenic contamination, including high concentrations of contaminants and leachable principle-threat waste due to historic smelting operations. The 04/22/04 Removal Action Memorandum (OU1) was written and approved to address properties with the worst contamination; 2) A non-residential operable unit (OU2) that includes non-residential properties between the two smelters including ground water, surface water and the ecosystem; 3) The Little Cottonwood Residential Development Operable Unit (OU3) which consists of 144 acres of mostly undeveloped land and is located adjacent to the northern extent of the Flagstaff Smelter - approximately 26 acres lie within OU1. There are plans in place by a private entity to develop OU3 into residential housing.

OU1 has previously been referred to as the ROU. OU3 is part of what formerly referred to as the NROU. All of the OUs are generally depicted in Figure 2.

1. Physical Location

The Davenport and Flagstaff Smelter's Superfund Site is located in the foothills of the Wasatch Mountains in a residential area at the mouth of Little Cottonwood Canyon, approximately 15 miles southeast of Salt Lake City (population of 833,840), and one mile east of Sandy City (population of 96,310), Utah. The Site is located within the southwest quarter of the northwest quarter of Section 12, Township 3 South, Range 1 East, Salt Lake base and Meridian. The former Flagstaff Smelter was located on the north side of Little Cottonwood Creek, and the former Davenport Smelter was located on the opposite side of the creek approximately 1/4 mile south of the Flagstaff Smelter.

2. Site Characteristics

Within the boundaries of OU1 are approximately 50 single-family homes on lots ranging from 1/4 to 1-acre in size with values from $500K to several million dollars. Twenty-three properties were delisted effective October 19, 2004. The Wasatch Mountains rise abruptly to the east with peaks greater than 11,000 feet less than 4 miles from the Site. Landscaping in the area is generally elaborate and professionally well maintained. Three major roads are in the vicinity of the Site - Little Cottonwood Canyon Road, North Little Cottonwood Canyon Road, and Wasatch Boulevard. Exhibit 1 is an aerial map of affected properties.

3. Removal Site Evaluation:

A Baseline Risk Assessment (BLRA) was performed for the Davenport and Flagstaff Smelter NPL Site by the EPA as part of the site characterization to determine if risks to human health associated with the contamination identified in previous investigations were sufficient to warrant remediation. As a result, the cleanup levels established for this NPL Site are 600 mg/Kg for lead and 126 mg/Kg for arsenic in the residential soils. A Remedial Investigation (RI) was performed to further characterize contaminated soil at residential properties surrounding the two smelters. Surface and subsurface sampling (0 to 36 inches at depth) was conducted in order to fill data gaps and to provide additional information to be used for evaluating remediation alternatives and prioritizing properties to be cleaned up. Sampling was also performed to define the vertical extent of contamination and to obtain

Toxicity Characteristic Leaching Procedure (TCLP) data to determine disposal and/or soil treatment options. In general, the RI found that lead concentrations in soil ranged from 6 to 123,000 mg/Kg and arsenic concentrations in soils ranged from <5 to 7,090 mg/Kg. There are some properties which lie on top of the former Davenport smelter and contain principle-threat waste with concentrations of lead (> 163,786 mg/Kg) and arsenic (>20,409 mg/Kg) far exceeding the clean up levels; EPA addressed these OU1 properties under the April 22, 2004 Time-Critical Removal Action.

A summary of the vertical contamination in conjunction with leachable characteristics on residential properties that are subject to this Non-Time Critical Removal Action is presented below.

****

Summary of "highest values of contamination" from _Report of Findings for Pre-Remedial Design Sampling_ - November 2003:

[illegible]	Sample Depth (inches)	Total Lead (mg/Kg)	TCLP Lead (mg/L)	Total Arsenic (mg/Kg)	TCLP Arsenic (mg/L)
9808 Little Cottonwood Ln. (D01)	0-2 2-6 6-12 12-18	24,000 3,200 3,000 7590	To Be Determined	530 86 160 423	<5
9756 Quail Ridge Rd. (D02)	0-2 2-6 6-12 12-18	2,287 2,884 11,465 5679	To Be Determined	117 170 376 261	<5
9726 Quail Ridge Rd. (D03)	0-2 2-6 6-12 12-18	7969 8157 3054 1799	To Be Determined	496 483 158 94	<5
9712 Quail Ridge Rd. (D04)	0-2 2-6 6-12 12-18	11980 5740 11747 3731	To Be Determined	1062 406 922 372	<5
9696 Quail Ridge Rd. (D05)	0-2 2-6 6-12 12-18	670 1900 2400 <600	To Be Determined	<126 <126 <126 <126	<5
9682 Quail Ridge Rd. (D06)	0-2 2-6 6-12 12-18	930 1300 1300 <600	To Be Determined	<126 <126 <126 <126	<5

9687 Quail Ridge Rd. (D07)	0-2 2-6 6-12 12-18	1100 930 990 <600	To Be Determined	<126 <126 <126 <126	<5
3601 Little Cottonwood Canyon Rd. (D14)	0-2 2-6 6-12 12-18	1797 2358 4595 6652	To Be Determined	<126 <126 228 453	<5
9744 Quail Ridge Rd. (D15)	0-2 2-6 6-12 12-18	4983 3886 1806 7098	To Be Determined	379 306 179 134	<5
Residences (*FLAGSTAFF SMELTER)	**Sample Depth (inches)**	**Total Lead (mg/Kg)**	**TCLP Lead (mg/L)**	**Total Arsenic (mg/Kg)**	**TCLP Arsenic (mg/L)**
3710 North Little Cottonwood Rd. (F01)	0-2 2-6 6-12 12-18	1200 980 988 1112	To Be Determined	<126 <126 <126 <126	<5
3660 North Little Cottonwood Rd. (F02)	0-2 2-6 6-12 12-18	5336 5176 3560 5546	To Be Determined	274 470 176 389	<5
3750 North Little Cottonwood Rd. (F03)	0-2 2-6 6-12 12-18	 8170 1300 730	To Be Determined	 300	<5
3656 North Little Cottonwood Rd. (F04)	0-2 2-6 6-12 12-18	47898 62362 18547 129946	To Be Determined	3779 2739 3171 12698	<5
3529 North Little Cottonwood Rd. (F05)	0-2 2-6 6-12 12-18	16294 940 1009 707	To Be Determined	<126 <126 <126 <126	<5

Detailed sample results are included as Exhibit 2.

4. Release or Threatened Release into the Environment of a Hazardous Substance, or Pollutant or Contaminant

Arsenic and lead (but particularly lead) have been identified at the Site as the contaminants of concern (COCs). Arsenic and lead are hazardous substances, as defined by Section 101 (14) of CERCLA. These hazardous substances appear to have been released into the residential soils by historic smeltering activities and spread downgradiant into what is now a residential area. The properties included in this Removal Action Memorandum contain unusually high levels of lead and arsenic of which lead is highly leachable. The threat posed by this Site is the inadvertent ingestion and inhalation of highly contaminated soil and dust as well as the continued migration of contaminants through wind, surface water and leaching into ground water.

5. NPL Status

The Hazardous Ranking package was completed on September 21, 2000 disclosing the severity of the potential release on the Site. The Site was placed on the National Priorities List (NPL) on April 30, 2003.

B. Other Actions to Date

1. Previous Actions

Because of the elevated levels of contamination, EPA conducted a time-critical removal action to address OU1 properties located on and near the former Davenport smelter, which contained extremely high concentrations of lead and arsenic and leachable lead constituting principle-threat waste. The Time-Critical Removal Action Memorandum for this portion of OU1 was signed on April 22, 2004. A total of 6 properties were completed.

2. Current Actions

OU1: On April 4, 2005, EPA and its contractor, START2, conducted follow-up removal assessment activities on the steep slope of the Davenport's properties and found more principle-threat waste stockpiles (approximately 10,000 cubic yards) that are required to be treated prior to disposal.

OU2: EPA and UDEQ are presently conducting a Remedial Investigation/Feasibility Study (RI/FS) on undeveloped land and commercial land near the Little Cottonwood Creek. The RI will further characterize contaminated soil on non-residential properties between the two former smelters as well as investigate impacts to groundwater, surface water and the eco-system. The FS will examine and rank the feasibility of different cleanup alternatives and will be used in selecting a remedy for this operable unit. The RI/FS is expected to be completed in 2006.

OU3: This property, which includes the undeveloped/non-residential properties and one existing dwelling (F05), is under contract to developers that intend to convert it into residential. The developers and EPA are working on an agreement that will ensure that the contamination is properly addressed. A decision document for the anticipated response action will be prepared by EPA in conjunction with the agreement. The response activities, which will be overseen by EPA and UDEQ, are anticipated to commence in June 2005.

C. State and Local Authorities' Roles

UDEQ is actively involved at this Site and has concurred with removal activities. UDEQ has assigned a project manager who is fully engaged in the design and implementation of the investigations and the actions proposed herein. The Salt Lake County Health Department is aware of the Site and potential Removal Action.

III. THREATS TO PUBLIC HEALTH OR WELFARE OR THE ENVIRONMENT, AND STATUTORY AND REGULATORY AUTHORITIES

In determining the appropriateness of this removal action, the factors set out in 40 C.F.R. Section 300.415(b)(2) were considered and the partial list of appropriate removal actions as defined in 40 C.F.R. Section 300.415(e) were used as guidance.

A. Threats to Public Health or Welfare

Conditions at the Site meet the criteria for initiating a removal action under 40 C.F.R. Section 300.415 (b) (2) of the National Contingency Plan (NCP). The following factors from Section 300.415 (b) (2) of the NCP form the basis for the EPA's determination of the threat presented and the appropriate action to be taken:

300.415 (b)(2)(i)	Actual or potential exposure to nearby human populations, animals, or the food chain from hazardous substances or pollutants or contaminants;
300.415 (b)(2)(iv)	High levels of hazardous substances or pollutants or contaminants in soils/surface water largely at or near the surface that may migrate; and
300.415 (b)(2)(v)	Weather conditions that may cause hazardous substances or pollutants or contaminants to migrate or be released.

In reviewing the data, EPA has concluded that there is a significant potential for continued lead and arsenic exposure to human populations at the Site. Threats to human health and selection of health protection action levels are described in detail in the RI, BLRA, and ROD (all of which have been referenced previously).

Arsenic is a hazardous substance as defined by Section 101(14) of CERCLA and is a confirmed human carcinogen, producing tumors in the liver and renal system. It is also poisonous by subcutaneous, intramuscular, and intraperitoneal routes. At lower doses ingestion will induce adverse systemic skin and gastrointestinal effects. It is also

classified as an experimental teratogen. Inorganic forms of arsenic, such as those found at the Site, are more toxic than organic forms in both acute and chronic exposures. Large doses of arsenic may be acutely fatal. Symptoms include fever, loss of appetite, enlarged liver, and heart rhythm abnormalities. Sensory loss in the peripheral nervous system may also occur. Chronic exposure to arsenic generally results in skin lesions, liver injury, and peripheral vascular disease. The peripheral vascular disease may progress to endarteritis obliterans and gangrene of the lower extremities (blackfoot disease). Arsenic is a human carcinogen based on observation of increased lung cancer mortality due to inhalation exposure and increased skin cancer in individuals exposed to arsenic via drinking water.

Lead is classified as a B2 carcinogen by EPA. This classification is the result of animal studies determining that these compounds are probable human carcinogens. Lead can enter the body via ingestion and inhalation. Children appear to be the segment of the population at greatest risk from toxic effects of lead. Initially, lead travels in the blood to the soft tissues (heart, liver, kidney, brain, etc.), then it gradually redistributes to the bones and teeth where it tends to remain. The most serious effects associated with markedly elevated blood lead levels include neurotoxic effects such as irreversible brain damage. Children have exhibited nerve damage, permanent mental retardation, colic, anemia, brain damage, and death.

B. Threats to the Environment

The primary threat identified is exposure to human populations. Pets, and to a lesser degree wildlife, could be affected as they come into direct contact with the contamination within the residential areas. An ecological risk assessment is to be conducted as part of the remedial investigation and feasibility study for OU2.

Wildlife and domesticated animals in adjacent habitats may be exposed to on-site contamination either through direct contact with contaminated soil, flowing and standing water, and sediments, or indirectly through consumption of organisms (algae, aquatic insects, or animals) feeding in the area. Toxic metals-contaminated water with a low pH is present in the surface waters on-site which have a potential to overflow and migrate to wetlands, agricultural land, residences and other recreational areas which are down-gradient from the Site. Only the threats posed by contaminated soil to human populations will be addressed by this Action Memorandum. The possible threats posed by affected water and sediments will be addressed as part of OU2.

The high levels of hazardous substances at or near the surface, that may migrate, are fully described in Section II, A.3 (Removal Site Evaluation). Arsenic concentration of the soil ranges from 86-12,698 mg/kg and lead concentration of the soil ranges from 670-129,946 mg/kg. The climate of the foothills of the Wasatch Mountain Range (including the Site area) varies throughout the year. Summer months are usually hot and dry with limited precipitation. The entire area is subject to severe and persistent inversion patterns, and dust storms are common to the area facilitating the migration of contaminated soils throughout the Site.

IV. ENDANGEMENT DETERMINATION

Actual or threatened releases of hazardous substances from this Site, if not addressed by implementing the response action selected in this Action Memorandum, may present an imminent and substantial endangerment to public health, or welfare, or the environment.

V. EXEMPTION FROM STATUTORY LIMITS

A. Exemption from the 12-month and $2 million statutory limits

This Removal Action requires longer than 12 months and more than $2 million to implement. As stated in Section I, an exemption is sought to extend the performance period beyond 12 months and to expend funds exceeding $2 million to implement this Removal Action.

B. Consistency Exemption

This Removal Action is appropriate and consistent with the remedial action to be taken and permanently abates the threat of exposure to high concentrations of hazardous substances and prevents further migration of contaminants. As this Removal Action implements the construction components of the remedial action chosen in the 2002 ROU ROD, this Removal Action is consistent with the planned remedial action for OU1. As such, the Agency does not expect to conduct further physical actions at this OU. Anticipated administrative remedial activities include incorporation of institutional controls to provide long-term protection of the soil cover through private owner maintenance of their respective soil cover and local government control of potential home improvement/construction activities that may affect the integrity of the soil cover. This Removal Action is appropriate as the removal of contaminated soils permanently reduces the risk of exposure to concentrations of hazardous substances that present an unacceptable risk; and the soil cover further mitigates the potential for migration of contaminants.

This removal action is also consistent with future actions at OU2 and OU3. Removal of soils with high levels of lead and arsenic will prevent further leaching of contaminants to groundwater. It will also eliminate runoff to surface water and windblown dispersal that may be impacting other environmental receptors and undeveloped lands. Nothing in this action will prevent or hinder the ability to conduct the necessary response activities at OU2 and OU3.

VI. PROPOSED ACTIONS

A. Proposed Action Description

1. Proposed Action Description

The clean-up action levels and the selected removal activities specified below are consistent with the April 22, 2004 Time-Critical Removal Action Memorandum and the ROD (September 2002). The selected removal for OU1 is excavation and off-site disposal of contaminated soil associated with smelter activities, contaminated soil underneath non-native vegetation, and hand excavation around areas of native vegetation. The major components of the selected removal include:

- Excavation of soils, under non-native vegetation, exhibiting lead concentrations greater than 600 mg/Kg and arsenic concentrations greater than 126 mg/Kg, where practicable.
- Hand excavation of soils around areas of native vegetation, exhibiting lead concentrations greater than 600 mg/Kg and arsenic concentrations greater than 126 mg/Kg.
- Excavation of principle-threat wastes associated with smelter activities, on-site treatment, and off-site disposal of treated soil classified as special waste in accordance with the Resource Conservation and Recovery Act (RCRA), Subtitle D.
- Off-site disposal of contaminated soil, containing principle-threat waste that cannot be treated, classified as hazardous waste in accordance with RCRA – Subtitle C.
- Replacement with clean backfill, six inches of topsoil and landscaping of affected properties. Properties will be returned to as close to original condition as possible.
- Interior cleaning of affected homes to remove any contaminated dust.
- Implementation of institutional controls, if necessary, on properties containing residual contamination.

The primary activity of this Non-Time Critical Removal Action consists of the excavation of approximately 100,000 cubic yards of contaminated soil including the principle-threat waste, on-site soil treatment with a phosphate mixture for contaminated soil exceeding 5 mg/L of extractable lead (TCLP), and disposal of the treated soil to the Salt Lake Valley Landfill. The excavated soil can be broken generally into two waste streams:

- Soil with concentrations of lead and arsenic that is above removal action levels, but is not RCRA hazardous waste (TCLP lead and arsenic less than 5 mg/L). This portion is estimated to be approximately 60 percent of the excavated soil.

- Soil with concentrations of lead and arsenic that is above removal action level and is RCRA hazardous waste due to lead TCLP concentration greater than 5 mg/L. This portion represents the remaining 40 percent of the excavated soil.

Most of the affected properties contain some areas of steep slopes where access is naturally limited. It was determined by EPA and UDEQ that there was minimal risk of exposure to the COCs in these areas due to the steepness of these slopes. Depending on the contamination severity and accessibility, certain steep slopes are not being recommended for remediation. Contaminated soils located beneath residential homes, sheds, garages, sidewalks, driveways, capped parking lots, roads, etc. will remain in place.

2. Contribution to Remedial Performance

This Action will mitigate potential health risks to humans in OU1. The clean up actions are consistent with the remedy selected in the ROD and meet the same Remedial Action Objectives (RAOs) as follows:

- Reducing risks from exposure to lead-contaminated soil such that no child under the age of seven has more than a 5% chance of exceeding a blood lead level of 10 milligrams of lead per deciliter of blood.
- Reducing risks from exposure to arsenic-contaminated soil such that no

person has greater than a 10^{-04} increased risk of contracting cancer from contaminated soil.
- Remediating soils to levels that allow continued residential use.
- Preventing the occurrence and spread of windblown contamination.

3. Description of Alternative Technologies

EPA will use the soil treatment option for soils that successfully used during the time critical removal action. Soils exceeding 5 mg/L extractable lead were successfully treated with TSP (phosphate compound) and disposed of as non-hazardous waste at the Salt Lake Valley Solid Waste Landfill. The treatment of the principle threat waste involved a two step in-situ process 1) application of 2% (TSP) on the surface area prior to excavation; 2) mixing an additional 1-2% (TSP) to the stockpiles prior to disposal. This treatment technique reduces the material-handling time and cleanup costs because a staging area (originally planned) is no longer needed.

4. Engineering Evaluation/Cost Analysis (EE/CA)

Where a planning period of at least six month exists, the NCP establishes important additional requirements for the use of removal authority. 40 CFR Section 300.415(b)(4) and (n)(4) require the development of an Engineering Evaluation/Cost Analysis (EE/CA) with public participation. The goals of the EE/CA are to identify the objectives of the removal action and to analyze the various alternatives that may used to satisfy these objectives for cost, effectiveness, and implementability. As stated in the *Guidance on Conducting Non-Time-Critical Removal Actions under CERCLA* (August 1993, OSWER Pub. 9360.0-32), "An EE/CA is similar to, but less comprehensive than, the RI/FS conducted for remedial actions." The EPA Region 8 Removal and Remedial Programs, with the concurrence of the UDEQ, determined that the RI/FS and ROD documents and community involvement proceedings previously developed and conducted for OU1 were substantially equivalent to requirements for a non-time critical removal and that there was no need to perform an EE/CA or conduct additional community meetings.

The Focused Feasibility Study Report (FFS) (URSGWC, 2001) for the ROU (now referred to as OU1) was completed in December 2001. Three alternatives were evaluated against seven of nine criteria described in the NCP. The remaining two criteria, State acceptance and community acceptance, were evaluated through the public process associated with the release of the Proposed Plan.

The seven criteria are further breakdowns of three major criteria: effectiveness, implementability, and cost, which are the criteria required to be evaluated in the EE/CA. Effectiveness is described as protectiveness of both human health and the environment in the short term and long term, and the ability to achieve the removal/remedial action objectives. Implementability considers technical and administrative feasibility. Cost analysis evaluates the direct capital cost and the long term costs associated with operation and maintenance (O&M), monitoring and other requirements.

The alternatives selected for detailed evaluation in the Focused Feasibility Study were:

Alternative 1 – No action;
Alternative 2 – Excavation and offsite disposal; and
Alternative 3 – Excavation of contaminated soil under non-native vegetation and soil cover around native vegetation.

For Alternative 1, there are no capital or O&M costs. Therefore, the costs are $0.00 for capital and $0.00 for O&M.

For Alternative 2, the capital and O&M costs combine for a total present worth cost of $11,950,000.

For Alternative 3, the capital and O&M costs combine for a total present worth cost of $9,717,000.

Note: These present worth costs were at the time the FFS was completed.

Subsequently, a ROD was issued on September 9, 2002 for the ROU (now referred to as OU1) of the Davenport and Flagstaff Smelters Superfund Site. Comparable to the EE/CA requirements the ROD included a Responsiveness Summary that presented stakeholders concerns about the Site and preferences regarding the remedial alternatives and explained how those concerns were addressed and factored into the remedy selection.

5. ARARs

This Removal Action will attain, to the extent practicable, considering the exigencies of the situation, all applicable or relevant and appropriate (ARAR) Federal, State or local standards, criteria or regulations. Attachment 2 contains a detailed analysis of the ARARs.

6. Project Schedule

The removal activities are tentatively scheduled to begin in May 2005 for the Davenport's properties and May 2006 for the Flagstaff's properties. Completion of excavations and monitoring of landscape restoration will continue into Spring 2007.

B. ESTIMATED COSTS

[illegible]	[illegible]	[illegible]	[illegible]	
Regional Allowance Costs:			Davenport Properties (May 2005)	Flagstaff Properties (May 2006)
Corp. of Engineers			$ 200,000	$ 100,000
Cleanup Contractors	Excavation of Contaminated Soil Treatment/Staging Facility Transportation and Disposal of Waste Property Restoration	$300,000 $400,000 $300,000 $300,000	$ 700,000 $ 100,000 $ 600,000 $ 400,000	$ 800,000 $ 400,000 $ 800,000 $ 800,000
Other Extramural Costs:				
START II	Sampling, Design, Surveying	$200,000	$ 200,000	$ 150,000
Subtotal		$1,500,000	$2,200,000	$3,050,000
20% Contingency		$300,000	$ 440,000	$ 610,000
Extramural Total		$1,800,000	$2,640,000	$3,660,000
[illegible]				
	Direct, Including Travel	$100,000	$ 200,000	$ 100,000
	Indirect	$100,000		
Intramural Total		$200,000	$ 200,000	$ 100,000
[illegible]		[illegible]	[illegible]	[illegible]

TOTAL SITE REMOVAL CEILING **$ 8,600,000**

*Indirect Costs (35%) $ 3,010,000

TOTAL ESTIMATED EPA COSTS FOR THIS REMOVAL ACTION **$11,610,000**

- **Direct Costs** include direct extramural costs and direct intramural costs. **Indirect costs** are calculated based on an estimated indirect cost rate expressed as a percentage of site-specific direct costs, consistent with the full cost accounting methodology effective October 2, 2000. These estimates do not include pre-judgment interest, do not take into account other enforcement costs, including Department of Justice costs, and may be adjusted during the course of the removal action. The estimates are for illustrative purposes only and their use is not intended to create any rights for responsible parties. Neither the lack of total costs estimates nor deviation of actual costs from this estimate will affect the United States' right to cost recovery.

VII. EXPECTED CHANGE IN THE SITUATION SHOULD ACTION BE DELAYED OR NOT TAKEN

If no removal action is taken at the Site or if the action is delayed, the residents in the area will continue to be exposed to high levels of lead and arsenic. The preliminary assessments indicate, based on the concentrations of lead and arsenic measured in the soil, that the contaminated soil at this site may pose an acute or short-term health risk to the residents.

VIII. OUTSTANDING POLICY ISSUES

None

IX. ENFORCEMENT

A separate memorandum has been prepared to provide a confidential summary of current and potential future enforcement actions.

X. RECOMMENDATION

This decision document represents the selected Non-Time-Critical Removal Action for a portion of the Residential Operable Unit (OU1) of the Davenport and Flagstaff Smelters NPL Site located at the mouth of Little Cottonwood Canyon approximately 15 miles southeast of Salt Lake City in Salt Lake County, Utah, developed in accordance with CERCLA, as amended, and not inconsistent with the NCP. This decision is based on the administrative record for the Site.

Conditions at the Site meet the NCP §300.415 (b) (2) criteria for a removal, and I recommend your approval of the proposed Non-Time Critical Removal Action. The total removal ceiling, if approved, will be **$ 8,610,000.**

Approve: _____ Date: 5/26/05
Max H. Dodson
Assistant Regional Administrator
Office of Ecosystems Protection and Remediation

Disapprove: _____ Date: _____
Max H. Dodson
Assistant Regional Administrator
Office of Ecosystems Protection and Remediation

Approve: _____ Date: 5/26/05
Carol Rushin,
Assistant Regional Administrator
Office of Enforcement, Compliance, & Environmental Justice

Disapprove: _____ Date: _____
Carol Rushin,
Assistant Regional Administrator
Office of Enforcement, Compliance, & Environmental Justice

Attachments:

Attachment 1:	Time-Critical Removal Action Memorandum (April 22, 2004)
Attachment 2:	ARARS
Figure1:	Figure of the Davenport & Flagstaff NPL Site
Figure 2:	Properties of Concern
Exhibit 1:	Aerial maps of Affected Properties
Exhibit 2:	Sample Results of Davenport Properties

SUPPLEMENTAL DOCUMENTS

Support/reference documents which may be helpful to the reader and/or have been cited in the report may be found in the Administrative Record File at the Superfund Records Center for Region VIII EPA, 999 18th Street, Denver, Colorado 80202.

DAVENPORT AND FLAGSTAFF SMELTERS SUPERFUND SITE
RESIDENTIAL OPERABLE UNIT
EXPLANATION OF SIGNIFICANT DIFFERENCES
November 2005

I. INTRODUCTION

This Explanation of Significant Differences (ESD) is being issued by the U.S. Environmental Protection Agency (EPA) to recognize impending development of undeveloped land into residential properties within the Davenport and Flagstaff Smelters Superfund Site (Site) since the *Record of Decision (ROD) for the Residential Operable Unit (ROU)* (EPA, 2002) was signed by EPA on September 30, 2002. At the time of the ROD, the Site had been divided into two operable units: A residential operable unit (ROU) that covered residential properties with lead and arsenic contamination from the historic smelting operations and a non-residential operable unit (NROU) that covers non-residential properties that have been impacted by the smelters. This ESD extends the remedy selected for the ROU to those areas that were considered non-residential at the release of the ROD and are now going to be developed into residential properties (OU3). The ROU shall be referred to as OU1 or ROU; the NROU shall be referred to as OU2 or NROU, and the area addressed by this ESD shall be referred to as OU3.

The changes to the ROD result from new information received by EPA subsequent to issuing the ROD. These changes do not fundamentally alter the remedy presented in the ROD. The remedy for the Davenport and Flagstaff Smelters Superfund Site remains protective of human health and the environment. This ESD is issued by EPA, after consultation with the Utah Department of Environmental Quality (UDEQ).

The modifications to the remedy described in this ESD do not alter the selected remedy in any fundamental aspect regarding primary treatment method and changes in remedy from containment to treatment. In accordance with Sections 117(c) and 121 of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (Superfund), as amended, 42 U.S.C. Section 9601, et seq. (CERCLA), and the regulations at 40 C.F.R. Section 300.435(c)(2)(I), the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), this ESD has been prepared for the following reasons:

- To provide the public with an explanation of the nature of the changes to the remedy;
- To summarize the circumstances that led to the changes to the remedy; and
- To affirm that the revised remedy complies with all statutory requirements.

This document presents a summary of the changes to the selected remedy and a synopsis of information on the Site. The Administrative Record, which contains this ESD and documentation supporting this significant difference, is available for public review at the locations indicated at the end of this report.

II. SITE HISTORY AND BACKGROUND

A. Location

Operable Unit 3 (OU3) for the Davenport and Flagstaff Smelters Superfund Site (UTD988075719) is located approximately 15 miles southeast of Salt Lake City, Utah, near the mouth of Little Cottonwood Canyon and within the northwest quarter of Section 12, Township 3 South, Range 1 East, Salt Lake Base and Meridian (see figure 1-1 from the *Focused Feasibility Study (FFS)*(URSGWC, 2001)). Three major roads are located in the vicinity of the Site (see figure 1-2 of FFS). These roads include Little Cottonwood Canyon Road (Utah 209) at the south end of the Site, North Fork Little Cottonwood Canyon Road (Utah 210) along the north margin of the Site, and Wasatch Boulevard on the west end of the Site. All three roads are major thoroughfares used for commuting by local residents, and for recreational access to Little Cottonwood Canyon. The Davenport Smelter was located on the southern side of the canyon, near Little Cottonwood Canyon Road. The Flagstaff Smelter was located north of Little Cottonwood Creek.

The Site lies within the foothills of the Wasatch Mountains which rise abruptly to the east of the Site with peak elevations greater than 11,000 feet less than 4 miles from the Site. Elevations range from approximately 5,150 to 5,230 feet across the Site.

The area surrounding the Site consists of affluent single-family homes, one of Salt Lake County's premier restaurants, and nonresidential property. As stated in the ROD, "Due to its proximity to the canyon and the extensive natural vegetation, the area is prime for growth and residential development." The *Davenport and Flagstaff Smelter Sites Remedial Investigation Report* (URSGWC, 2001a) provides a more detailed description of the Site.

B. Site History

The Davenport and Flagstaff Smelters, active during the early-to-mid 1870's, processed lead and silver ores derived from mines in the Alta, Utah area. Ore was delivered to the smelters using wagons and possibly rail cars. The ore was stockpiled near the smelters until it was processed. The smelting process involved the crushing and melting of sulfide ore in order to concentrate the desired metals. This crushing process likely released arsenic, lead, and other metals from the rock matrix in the form of dust. In addition, flue ash from the smelting process likely contained concentrated levels of these metals, which would have settled across the Site and vicinity. Both smelters were decommissioned and dismantled by 1879.

The 1991 discovery of ladle casts in Little Cottonwood Creek, near the historic Flagstaff Smelter, prompted an environmental study of the Site. During investigations performed by EPA in 1992, and by UDEQ in 1994, elevated concentrations of arsenic and lead were detected in the soils at both smelter locations. Little physical evidence of the smelters remains; however, slag piles and soil contaminated with lead and arsenic remain in the area.

C. History of Site Investigations

The EPA Region VIII, Emergency Response Branch Technical Assistance Team (TAT) in April of 1992, conducted a Phase I Site assessment of the Flagstaff Smelter. Detections of elevated levels of arsenic and lead in surface and subsurface soils led to a Phase II Site Assessment. During the Phase II investigation, the Davenport Smelter was discovered south of the Flagstaff Smelter. The area around the Davenport Smelter was investigated as Phase III in July of 1992 and the results are presented in the *Site Assessment, Little Cottonwood Creek Smelter Sites – Phase III, Davenport Smelter* (TAT, 1993). As stated in the *Record of Decision* (EPA, 2002), "... [these investigations] revealed high levels and widespread distribution of arsenic and lead contaminated soils surrounding the former smelters."

A Preliminary Assessment (PA) was performed in August 1992; Focused Site Inspection in 1994; and additional sampling in 1994. The data demonstrates the distribution of soil contaminants dispersed from the source area via air, surface water, or groundwater pathways and is available in *Analytical Results Report – Davenport Smelter* (UDEQ, 1995), and *Analytical Results Report – Flagstaff Smelter* (UDEQ, 1995a).

The Site was further characterized in 1998 with data collected primarily from residential areas although sampling was performed in non-residential areas. The scope of this investigation was described in detail in a document entitled *Final Quality Assurance Project Plan for Davenport and Flagstaff Smelter Site Characterization Study* (SAIC, 1998) and represents the majority of the data collected to characterize the Site. Site characterization results were reported in the *Final Site Characterization Study for Davenport and Flagstaff Smelters Residential Area* (SAIC, 2000). As stated in the *Remedial Investigation Report* (URSGWC, 2001a), "UDEQ also performed an investigation of undeveloped areas with emphasis on the area around the former Flagstaff Smelter as described in a document entitled *Addendum to the Final Quality Assurance Project Plan For Davenport and Flagstaff Smelter, Sampling of Undeveloped Lands* (UDEQ, 2000a). The results of this investigation were reported in a document entitled *Addendum to the Final Quality Assurance Project Plan for Davenport and Flagstaff Smelter, Sampling of Undeveloped Lands, Sampling Results Report* (UDEQ, 2000b). Lead levels greater than 200,000 mg/kg were detected in the investigation area (UDEQ, 2000b)."

As part of the Remedial Investigation (RI), URSGWC collected soil samples in March 2001, at 3 residential properties that had not been sampled during previous

investigations, and 1 property that had been sampled previously. URSGWC expanded collection of soil samples in July 2001, to further characterize the extent of contamination at 6 residences. Two surface water springs within the residential area were also sampled in July 2001. The RI states, "In addition to the residential areas, it was proposed to collect samples in an undeveloped area (Salt Lake City property) west of the residential lots located on Quail Ridge Road. Sampling in this area better defined the residential/nonresidential boundary and more fully defined the concentration contours along the edge of the ROU."

The *Baseline Human Health Risk Assessment* (ISSI, 1999) was performed for the Davenport and Flagstaff Smelter sites by EPA as part of the *Final Site Characterization Study* (SAIC, 2000). As stated in the *Remedial Investigation Report* (URSGWC, 2001a), "A risk management decision by the UDEQ and USEPA established action levels of 600 mg/kg for lead and 126 mg/kg for arsenic in residential surface soils for these sites."

The *Focused Feasibility Study Report* (URSGWC, 2001) for the ROU was completed December 2001. Three alternatives were evaluated against seven of the nine criteria described in the National Contingency Plan (NCP). The remaining two criteria, State acceptance and community acceptance were evaluated through the public process associated with the release of the Proposed Plan and receipt of comments from the State and public. Utilizing the studies cited above, within the Administrative Record, and the public process, EPA, with concurrence of UDEQ, selected a remedy for residential properties and issued the Record of Decision (EPA, 2002) on September 30, 2002.

In preparation for implementation of the ROU remedy, URS Corporation (URS) collected field sampling and X-ray fluorescence (XRF) analyses to characterize lead and arsenic concentrations in soil to provide additional soil data for the accurate estimate of soil volumes exceeding the removal action levels of 600 mg/kg for lead and 126 mg/kg for arsenic. The pre-design sampling locations complement previously recorded lead and arsenic concentrations within the ROU and are delineated in the *Report of Findings for Pre-Remedial Design Sampling Residential Operable Unit* (URS, 2003).

A Time-Critical Removal Action (TCRA) (EPA, 2004a) was initiated April 22, 2004 to address a minimum of four of the 20 contaminated residential properties within the area situated at the location of the former Davenport Smelter, within the Davenport and Flagstaff Smelters Superfund Site Residential Operable Unit (ROU). The removal action was time-critical "[b]ecause there are residential properties which lie on top of the former Davenport smelter and contain concentrations of lead and arsenic far exceeding the action level." The TCRA states, "The proposed Removal Action will address most critical immediate threats identified during the Environmental Protection Agency's (EPA) and Utah Department of Environmental Quality's (UDEQ) sampling events which occurred from 1992 to present. Six properties within

the Davenport Smelter area of the Davenport and Flagstaff Smelters Superfund Site ROU were cleaned-up under this TCRA.

A Non-Time Critical Removal Action (NTCRA) (EPA, 2005) was initiated May 26, 2005 to address the remaining residential properties within OU1 not cleaned up under the 2004 TCRA.

III. DESCRIPTION OF THE ROU ROD REMEDY AND THIS ESD

A. Description of the ROU ROD Remedy

Four Remedial Action Objectives (RAOs) were derived from the risk quantified in the BLRA:

- Reducing risks from exposure to lead-contaminated soil such that no child under the age of seven has more than a 5 percent chance of exceeding a blood lead level of 10 micrograms of lead per deciliter of blood.
- Reducing risks from exposure to arsenic-contaminated soil such that no person has greater than a 1 in 10,000 (10^{-4}) increased risk of contracting cancer from contaminated soil.
- Remediating soils to levels that allow continued residential use.
- Preventing the occurrence and spread of windblown contamination.

The clean-up levels were arrived at through the use of health-based goals. The established action level of 600 mg/kg for lead was based upon preventing exposure to a child such that no child under the age of seven has more than a 5 percent chance of exceeding a blood lead concentration of 10 micrograms of lead per deciliter of blood. The arsenic action level of 126 mg/kg was derived from a target cancer risk level of 10^{-4}.

The selected remedy achieves the RAOs through the following key components:

- Excavation and off-site treatment and disposal of principal-threat wastes;
- Excavation of contaminated soil to a depth of 18" from all properties recommended for remediation that have total soil-lead levels exceeding 600 mg/kg and total arsenic levels exceeding 126 mg/kg. Properties with principal-threat wastes may be excavated to depths greater than 18";
- Hand excavation around affected areas of native vegetation;
- Transportation and disposal of all excavated soils with less than 5 mg/L extractable lead (using TCLP) at a suitable class I or Subtitle C landfill;
- Transportation, off-site treatment (to meet land disposal requirements) and disposal of characteristically hazardous soil at a suitable Subtitle C landfill;
- Placing clean, imported soil, backfill and a 6-inch topsoil layer over all excavated soil surfaces;
- Removal and replanting of affected non-native vegetation;

- Cleaning of the interiors of all buildings located on remediated properties to remove interior dust; and
- Development and implementation of institutional controls for any contamination left in place on properties recommended for remediation.

B. Description of this ESD

This ESD addresses the area, within the Davenport and Flagstaff Smelters Superfund Site, targeted by L.C. Canyon Partners, LLC (LCP) for development of residential properties. The remedy components identified in the ROD for ROU shall be applied to residential developments in OU3 as these components were presumptively developed to address unacceptable health risks to residential communities exposed to contaminants from smelting activities of the historic Davenport and Flagstaff Smelters. LCP plans to develop approximately 36 acres with 32 acres for residential use and 4 acres as open space. LCP intends to purchase approximately 36 acres west of State Highway 210 and approximately 14 acres east of State Highway 210. The 14 acres east of 210 are not contaminated above cleanup action levels and, therefore, are not included in OU3. The 36 acres west of 210, which comprise OU3, include approximately 26 acres of land currently known to be contaminated above OU3 cleanup levels.

Also, this ESD modifies the remedy to allow on-site treatment of soil exhibiting a characteristic of hazardous waste. This treatment involves mixing a chemical stabilizing agent with the contaminated soil either in-situ or in staging piles. Treated wastes can be transported to an off-site solid waste landfill for disposal if the material no longer exhibits a characteristic and it complies with land disposal restrictions found within 40 CFR 268 and UAC R315-13. Any hazardous remediation wastes transported off-site for disposal will be taken to a RCRA Subtitle C facility as required by the ROD.

IV. SIGNIFICANT DIFFERENCES TO THE REMEDY

This ESD recognizes the impending development of 36 acres within the Davenport and Flagstaff Smelters Superfund Site into residential properties. Existing residential areas are specifically addressed in the *ROU ROD* (EPA, 2002). Although this area was zoned for residential use, the ROU did not include this area because it was undeveloped, there were no interested developers at the time of the ROD, and there were no currently exposed populations. There is one home, with its surrounding five acres, located within the 36 acres that was identified as part of the ROU and is identified as the property located at 3529 North Little Cottonwood Road.

This ESD allows on-site treatment of hazardous remediation waste rather than requiring that all waste be transported off-site for treatment and disposal. This modification does not alter the scope or performance of the remedy, but is expected to reduce the overall waste treatment, transportation and disposal costs. On-site

treatment will allow waste to be disposed at a nearby solid waste landfill rather than at a more distant hazardous waste landfill.

V. DETAILED DESCRIPTION OF EVENTS LEADING TO THIS ESD

A. New Information

Since the issuance of the *ROU ROD* (EPA, 2002), LCP, a group of developers, initiated an effort to rezone 118 acres located within the Davenport and Flagstaff Smelters Superfund Site to meet their redevelopment plans. LCP discussed their plans to develop the area with numerous community groups including the Granite Community Council representing Davenport subdivision residents in May, 2004, and on June 2, 2004; the Cottonwood Heights Township Planning Commission on June 9, 2004, and July 14, 2004; and the Cottonwood Heights Township in August of 2004. Their extensive communications with the public led to no objections to the rezoning that was unanimously approved by the Salt Lake County Council on September 7, 2004.

LCP met with EPA and UDEQ in the fall of 2004 to discuss the potential development and submitted a report that further characterized the acreage through collection of additional data used to confirm the results of UDEQ data (UDEQ, 2000a). The additional data also served to define the extent of contamination, and to estimate the volume of impacted material. Resource Management Consultants, on behalf of LCP, collected the additional data that is described in a report titled *Site Characterization Report – Little Cottonwood Canyon Property* (RMC, 2004).

LCP submitted a *Removal Action Work Plan for Little Cottonwood Canyon Partners* (REMC, 2005) that describes how the components of the ROU remedy will be implemented by LCP during the remediation of the 36 acres.

During the Time-Critical Removal Action conducted at the Site in 2004, excavated hazardous remediation waste was successfully treated on-site and then transported to a local solid waste landfill for disposal. This ESD authorizes chemical stabilization treatment of characteristic soils until the principal threat waste is no longer leachable under TCLP criteria and can meet the waste acceptance criteria for permitted solid waste landfill facilities.

B. Discussions

This ESD requires the application of the ROU remedy components to the acreage that will be developed for residential use. It also allows on-site treatment of excavated hazardous remediation waste. Acreage outside the residential development falls under the jurisdiction of OU2. Consideration of the public health and environmental risk from any contamination found during the remedial investigation of these areas by UDEQ will be the subject of the future OU2 record of decision.

Data collected by UDEQ (UDEQ, 2000a) during the RI and subsequently confirmed by the data collected by RMC (RMC, 2004) clearly identifies contamination at concentrations within the 36 acres that pose a health risk to potential residents. The components of the ROU ROD are appropriate for OU3 to mitigate the risks posed to potential residents because these components address similar exposure scenarios, similar contaminants, and similar concentrations of the contaminants coming from the same source.

VI. SUMMARY OF PUBLIC PARTICIPATION, OPPORTUNITY FOR STATE COMMENTS, AND AVAILABILITY OF ADMINISTRATIVE RECORD

All of the public participation requirements have been met. UDEQ has been provided with the opportunity to review and comment on this ESD and the documents that serve as the basis for this ESD. UDEQ commented to EPA on this document, and supports the changes. UDEQ's comments can be found in the Administrative Record for the Site.

Documents referenced within this ESD are part of the Administrative Record for the Davenport and Flagstaff Smelters Superfund Site. The complete administrative record for the Site is available for public review at the following locations:

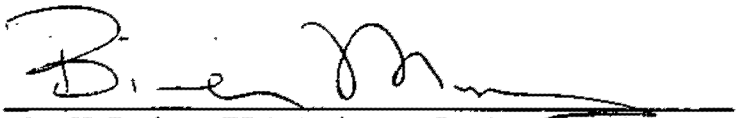
EPA Superfund Records Center
999 18th Street, Fifth Floor
Denver, Colorado 80202
Hours: Monday-Friday, 8:00am – 4:30 pm
Telephone: (303) 312-6473

Sandy City Library
10100 South Petunia Way
Sandy, Utah 84092
Hours: Mon-Sat, 10:00am-6:00 pm
Phone: 801-944-7574

VII. STATUTORY DETERMINATIONS

Considering the new information that has been developed and the changes that have been made to the selected remedy, EPA, in consultation with UDEQ, believes that the remedy remains protective of human health and the environment, and complies with Federal and State requirements that are both applicable or relevant and appropriate to this remedial action. In addition, applying this residential remedy to the area that is being newly developed into residential properties is cost-effective and utilizes permanent solutions and treatment technologies to the maximum extent.

VIII. APPROVAL



11/15/05

Max H. Dodson, EPA Assistance Regional Administrator — Date
Office of Ecosystems Protection and Remediation

IX. REFERENCES

EPA, 2002. Record of Decision, Residential Operable Unit, Davenport and Flagstaff Smelters Superfund Site, Salt Lake County, Utah.

EPA, 2004a. Time-Critical Removal Action Memorandum, Davenport and Flagstaff Smelters NPL Site Residential Operable Unit, Salt Lake County, Utah.

EPA, 2004b. 40 CFR Part 300 Federal Register, Volume 69, Number 161, Page 51583-51586, August 20, 2004.

EPA, 2005. Non-Time-Critical Removal Action Memorandum, Davenport and Flagstaff Smelters NPL Site Residential Operable Unit, Salt Lake County, Utah.

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Resource Environmental Management Consultants, 2004 (December). Removal Action Work Plan for Little Cottonwood Canyon Partners, Midvale, Utah.

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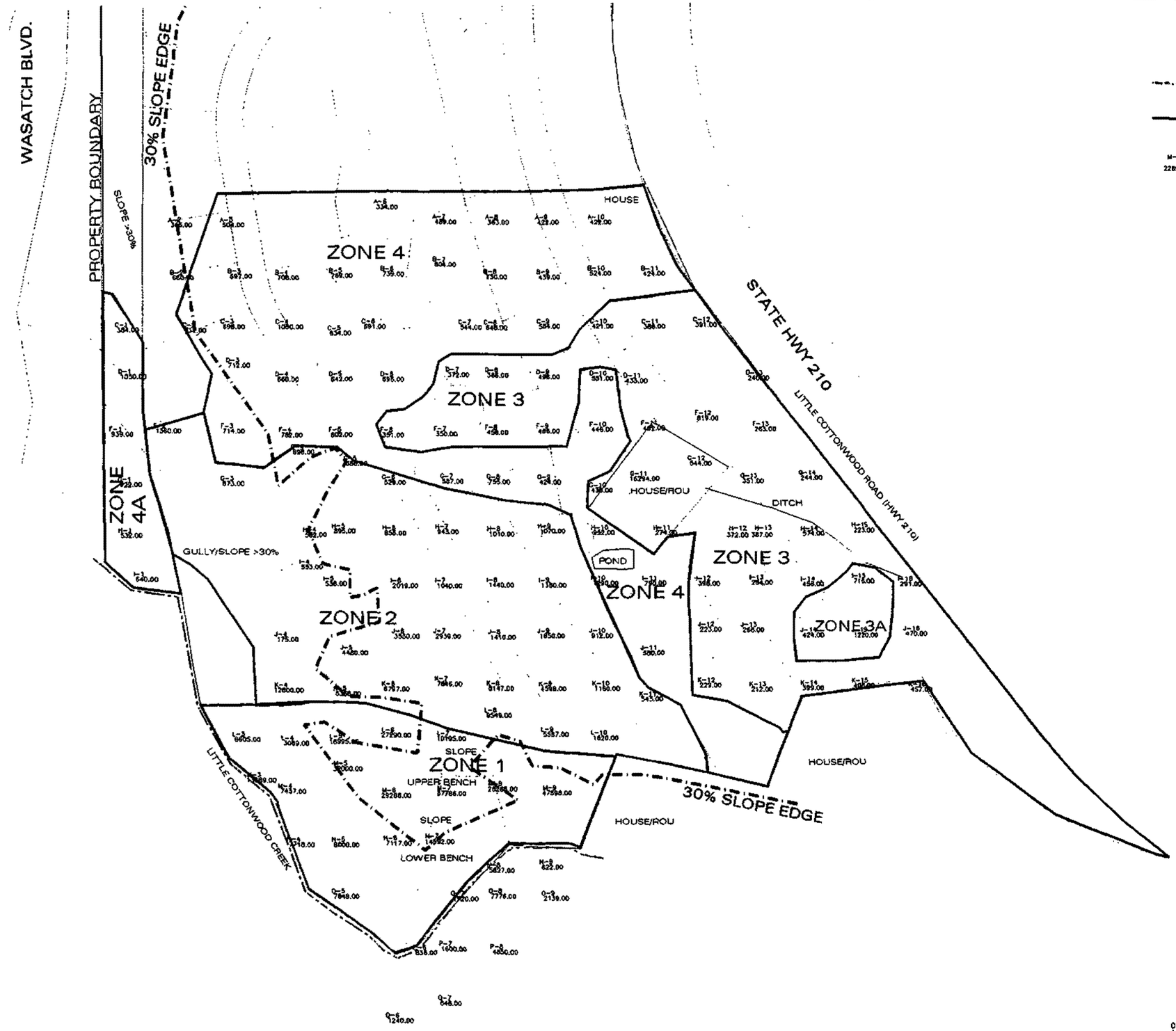
URS Corporation, 2003 (November). Report of Findings For Pre-Remedial Design Sampling Residential Operable Unit, Davenport and Flagstaff Superfund Site, Salt Lake County, Utah.



LEGEND

SITE FEATURE

PROPOSED REMEDIAL ZONE

M-6 22899.00 DERR SAMPLE LOCATION WITH SURFACE LEAD CONCENTRATION (PPM)

NOTES:
REMEDIAL ZONES BASED ON RMC AND DERR DATA.
REMEDIAL ZONES:
ZONE 1 - 12" SOIL REMOVAL
ZONE 2 - 12" SOIL REMOVAL
ZONE 3 - 6" SOIL REMOVAL IN ZONE 3A ONLY
ZONES 4 and 4A - 6" SOIL REMOVAL

N

SCALE
0 50 100 150 200
FEET

LITTLE COTTONWOOD AREA

FIGURE 1
DERR 2000
SURFACE SAMPLE LOCATION MAP

RESOURCE MANAGEMENT CONSULTANTS
8138 SOUTH STATE ST.
SUITE 2A
MIDVALE, UT 84047
801-255-2626

SEPTEMBER 2004

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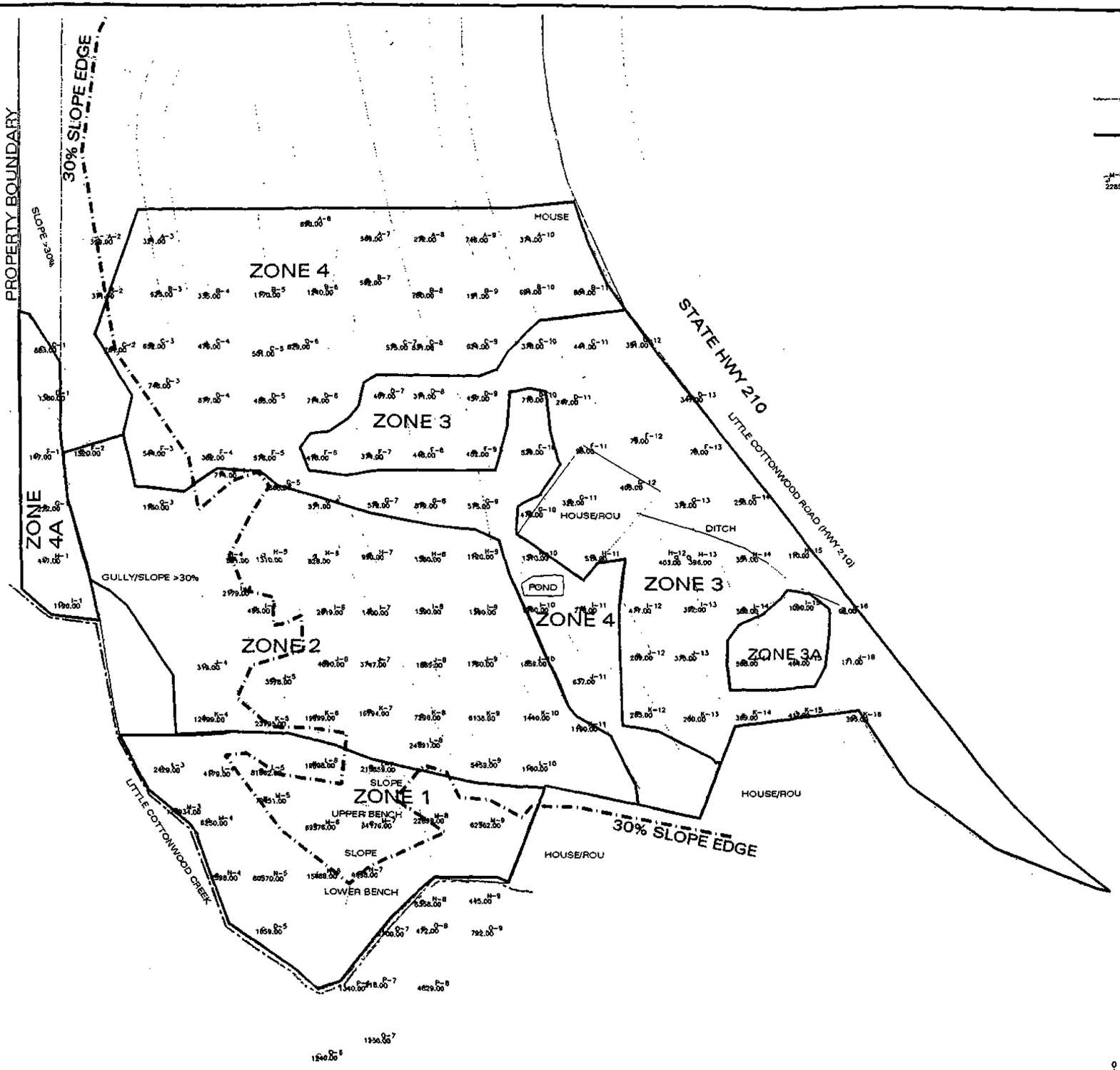

LEGEND

SITE FEATURE

PROPOSED REMEDIAL ZONE

DERR SAMPLE LOCATION WITH 6" DEPTH LEAD CONCENTRATION (PPM)

NOTES:
REMEDIAL ZONES BASED ON RMC AND DERR DATA.
REMEDIAL ZONES:
ZONE 1 - 12" SOIL REMOVAL
ZONE 2 - 12" SOIL REMOVAL
ZONE 3 - 6" SOIL REMOVAL IN ZONE 3A ONLY
ZONES 4 and 4A - 6" SOIL REMOVAL

SCALE
0 50 100 150 200
FEET

LITTLE COTTONWOOD AREA

FIGURE 2
DERR 2000
6" SAMPLE LOCATION MAP

RESOURCE MANAGEMENT CONSULTANTS
8136 SOUTH STATE ST.
SUITE 2A
MIDVALE, UT 84047
801-255-2626

SEPTEMBER 2004

lcc8.dwg

Figure 1

WASATCH BLVD.

PROPERTY BOUNDARY

30% SLOPE EDGE

SLOPE >30%

ZONE 4A

ZONE 2

ZONE 4

ZONE 3

ZONE 1

ZONE 3A

HOUSE

STATE HWY 210

LITTLE COTTONWOOD ROAD (HWY-210)

HOUSE/ROU

DITCH

POND

GULLY/SLOPE >30%

HILL SLOPE

SLOPE

ABOVE WALL

BELOW WALL

M-6 UPPER BENCH

HILL SLOPE LOWER BENCH

LITTLE COTTONWOOD CREEK

30% SLOPE EDGE

LEGEND

SITE FEATURE

PROPOSED REMEDIAL ZONE

M-6
S'- SURFACE
6"- 6" DEPTH
12"- 12" DEPTH
18" - 18" DEPTH

RMC XRF SAMPLE LOCATION WITH LEAD CONCENTRATION (PPM)

NOTES:
REMEDIAL ZONES BASED ON RMC AND DERR DATA.
REMEDIAL ZONES:
ZONE 1 - 12" SOIL REMOVAL
ZONE 2 - 12" SOIL REMOVAL
ZONE 3 - 6" SOIL REMOVAL IN ZONE 3A ONLY
ZONES 4 and 4A - 6" SOIL REMOVAL

N

SCALE
0 50 100 150 200
FEET

LITTLE COTTONWOOD AREA

FIGURE 3
RMC XRF
SAMPLE LOCATION MAP

RESOURCE MANAGEMENT CONSULTANTS
6138 SOUTH STATE ST.
SUITE 2A
MIDVALE, UT 84047
801-255-2628

SEPTEMBER 2004

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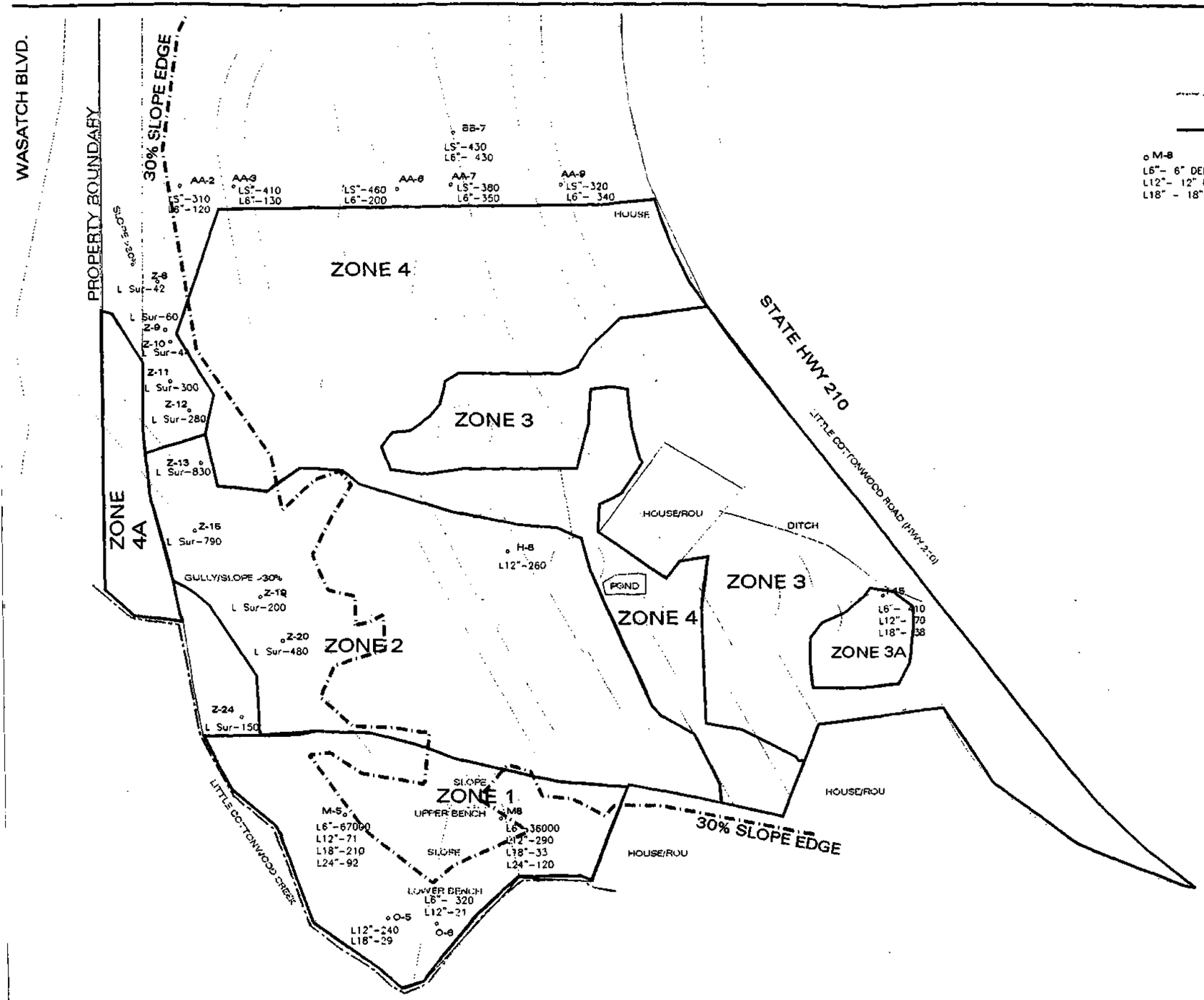

LEGEND

SITE FEATURE

PROPOSED REMEDIAL ZONE

M-8
L6"- 6" DEPTH
L12"- 12" DEPTH
L18" - 18" DEPTH
RMC LABORATORY SAMPLE LOCATION WITH LEAD CONCENTRATION (PPM)

NOTES:
REMEDIAL ZONES BASED ON RMC AND DERR DATA.
REMEDIAL ZONES:
ZONE 1 - 12" SOIL REMOVAL
ZONE 2 - 12" SOIL REMOVAL
ZONE 3 - 6" REMOVAL IN ZONE 3A ONLY
ZONES 4 and 4A - 6" SOIL REMOVAL

N

SCALE
0 50 100 150 200
FEET

LITTLE COTTONWOOD AREA

FIGURE 4
RMC LABORATORY SAMPLE LOCATION MAP

RESOURCE MANAGEMENT CONSULTANTS
8138 SOUTH STATE ST.
SUITE 2A
MIDVALE, UT 84047
801-255-2626

SEPTEMBER 2004

lcc8.dwg

EXHIBIT 5
Work Plan

REMOVAL ACTION WORK PLAN
FOR
LITTLE COTTONWOOD CANYON PARTNERS

EPA ID No. UTD988075719

November 15, 2005

Prepared for:

Little Cottonwood Canyon Partners, LLC
7561 Brighton Point Drive
Salt Lake City, UT 84121

Prepared by:

Resource Environmental Management Consultants d.b.a. RMC
8138 South State Street, Suite 2A
Midvale, Utah 84047

Phone: (801) 255-2626
Fax: (801) 255-3266

EXHIBIT 5
Work Plan

Table of Contents

EXHIBIT 5
Work Plan

List of Figures

List of Appendices

EXHIBIT 5
Work Plan

1.0 Introduction

This Removal Action Work Plan (Work Plan) describes proposed removal action activities for OU3 of the Davenport and Flagstaff Smelters Site property (Site), EPA ID No. UTD988075719, located in Sandy, Utah. The Work Plan is required pursuant to, is incorporated into, and therefore, is an enforceable part of the Agreement and Covenant Not to Sue L.C. Canyon Partners, LLC. This Work Plan responds to reporting requirements established in the Statement of Work exhibit in the Agreement.

The Enforcement Non-Time Critical Removal Action Memorandum – Operable Unit 3—(NTCRA-OU3), prepared by EPA, documents need for the removal. This Work Plan has been prepared to be part of the Agreement and NTCRA-OU3 Memorandum for the Site.

The National Contingency Plan (NCP) requires that fund-financed removal actions under CERCLA Section 104 and removal actions pursuant to CERCLA Section 106 attain applicable or relevant and appropriate requirements (ARARs) under federal environmental or state environmental or siting laws "to the extent practicable" considering the urgency of the situation and the scope of the removal action (See 40 C.F.R. Part 300.415(j)). In this particular case, the work performed at the Site will attain ARARs as set forth in the Nontime-Critical Removal Action (NTCRA) memo.

L.C. Canyon Partners, LLC (LCP) is purchasing approximately 49 acres of mostly undeveloped land located at the mouth of Little Cottonwood Canyon (see Figure 1). Within the property there are approximately 26 acres that lie within the Flagstaff and Davenport Smelters Site. The Agreement will provide liability protection to LCP in its' purchase of property contaminated from historic smelting activities. LCP will conduct the removal action described in this Work Plan and redevelop the contaminated property into residential, public parks and open space uses.

EXHIBIT 5
Work Plan

1.1 Background

The historic Flagstaff Smelter was located on the southern extent of the Site near Little Cottonwood Creek (see Figure 2). The smelter operated during the early to mid 1870's processing lead and copper ores (DERR, 2000). From the mid 1870's to present time, the Site has been used for open space, agricultural and residential purposes.

A portion of the Site is adjacent to the Davenport and Flagstaff Smelter Sites Residential Operable Unit (OU1). EPA is currently conducting a NTCRA at OU1.

1.2 Scope of Removal Action

The primary activity of this removal action will be the excavation, treatment and removal of impacted soils from the Site. Removal areas are presented in Figure 2. Impacted soils excavated during the removal action will be transported and disposed of at an appropriate facility. This "off-site disposal" will be consistent with all applicable federal, state, and local laws, including USEPA's off-site rule. Soils requiring treatment prior to disposal will be treated onsite. Confirmation sampling will be conducted to determine that the removal of impacted materials is complete. One residence (3529 Little Cottonwood Road) is located within the removal area. LCP will remove lead and arsenic contaminated soils on this property as part of the removal action.

1.3 Project Organization

Duc Nguyen, is the On-Scene Coordinator for EPA and Thomas Daniels is the Utah Division of Environmental Response and Remediation (DERR) Project Manager for the project. Irv Eastham will represent LCP as the overall project manager. Jim Fricke with Resource Management Consultants (RMC) will provide environmental project management. RMC may hire subcontractors for applicable portions of the project.

1.4 Project Deliverables

A Sampling and Analysis Plan (SAP) is included in Appendix A. The SAP will be used to determine how sampling will be conducted and documents quality control measures for project. In addition the SAP will be used to ensure that any materials imported for the remedial project do not contain hazardous or contaminated materials. A Health and Safety Plan (HASP) has been prepared and is presented in Appendix B. The HASP will ensure that all remedial and sampling activities are conducted in accordance with OSHA 29 CFR Part 1910.120.

Remedial design elements have been prepared and are included in this Work Plan. Specifications and guidelines for conducting the removal action are included in the following sections.

The results of removal action and confirmation sampling will be documented in a Final Report. This Final Report will conform to the requirements set forth in the Statement of Work (SOW) to be included in the Agreement. An outline defining the minimum required topics for the final report is included in the SOW.

2.0 PROPOSED LAND USE

The proposed final land use at the site will consist of residential development and open space. Proposed land use areas are presented in Figure 3. The LCP redevelopment project area consists of 49 acres, approximately 33 acres will be residential, and 16 acres park lands and open space. Removal activities presented in this Work Plan will transform land that is currently contaminated with smelter wastes (26 acres) into residential properties as well as publicly accessible open space lands. Final land improvements will include the removal of approximately 43,000 cyds of contaminated soil, and the preservation of watershed and open space lands. Land use benefits to the public include the cleanup and reuse of contaminated lands as well as preservation of open space. This description of the project area is consistent with the concept plan for

the Granite Oaks Planned Unit Development (PUD) as filed with the planning and zoning agency.

Residential development will consist of single family homes on lot sizes ranging from approximately 0.33 acres to 3.5 acres. Approximately 39 homes are planned. Open space lands will generally consist of undeveloped lands, watershed and habitat protection. Open space lands will be available for public uses such as hiking and wildlife viewing.

3.0 SITE CHARACTERIZATION

Previous Site characterization conducted onsite includes work conducted by EPA, DERR and RMC. The data presented in these studies is sufficient to characterize Site conditions. No further Site characterization data are necessary to conduct the removal action. The horizontal and vertical extents of contamination within the project boundary are well defined and are presented as part of the Site Characterization Report presented Appendix C. During the removal action real time lead and arsenic analyses will be conducted in each zone to guide excavation depths.

In 1993 Ecology and Environment, Inc (E&E) conducted a Phase II Site Assessment for EPA. The study indicated that lead concentrations for the southern portion of the Site exceeded 8,000 parts per million (ppm). The Site Assessment did not define the limits of contamination.

A detailed Site characterization was performed by DERR in 2000 (DERR, 2000). The DERR study conducted primarily surface and six-inch (6") depth sampling on a 100 by 100 foot grid over the southern portion of the Site. A limited area of twelve and eighteen inch sampling was conducted in the estimated vicinity of the Flagstaff Smelter footprint. The DERR work did not define the northern extent of impacts at the Site and the delineation of at-depth impacts were not completely defined for the Site.

RMC conducted Site characterization work during 2004. Site characterization work was conducted to verify the results of DERR data and to provide definitive definition of the extents of surface and subsurface contamination. The RMC Site Characterization Report is included in Appendix C of this Work Plan. The Site Characterization Report (RMC, 2004) used a combination of DERR and RMC data to define the limits of contamination and remedial zones. RMC conducted field X-Ray Fluorescence (XRF) screening and laboratory analysis of surface and at-depth soils. The DERR sample grid was extended to define the limits of contamination. Depth profiling was conducted using a trackhoe when necessary to define the total depth of contaminated soils. Remedial zones were defined using a combination of all available data and are based on the depths of impacts, degree of contamination and soils to be removed. The results of the RMC Site Characterization indicate that contamination is limited to the area in the vicinity of historic Flagstaff Smelter. Soils in the immediate vicinity of the historic Flagstaff Smelter (Zone 1, Figure 2) contain lead concentrations exceeding 50,000 parts per million (ppm) with a maximum depth of less than twelve inches (12"). North of the smelter location the depth of contamination ranges from less than twelve inches (12") in an area that was previously farmed (Zone 2, Figure 2) to less then six inches (6") in undisturbed areas (Zone 4, Figure 2). The degree of lead contamination generally decreases with distance from the historic smelter location.

In summary, current data is sufficient to define the extents of impacts and to define removal areas and processes.

4.0 REMOVAL ACTION

This section describes general procedures to be conducted during the removal action.

Removal Action Levels (RALs) will be the same as those used at the Davenport Smelter Site. The Davenport Site is located approximately 1/2 mile south of the Flagstaff Smelter Site, ores and wastes for both sites originated from the Little Cottonwood Canyon mines. A Baseline Human Health Risk Assessment (BHHRA, ISSW, 2001) was conducted for

USEPA on the Davenport and Flagstaff Sites. RALs were calculated based on the BHHRA (SRC, 2001). The risk assessment and resulting RALs are applicable to use at the Flagstaff Site given the close proximity and similar mine waste characteristics of the two sites. The RALs are 600 ppm and 126 ppm for lead and arsenic, respectively. These RALs are based on residential exposures. Currently the Site is comprised of open space, agricultural and one residential property located within the removal area. LCP will remove contaminated soils at 3529 Little Cottonwood Road as part of the removal action.

4.1 Pre-Removal Activities

Prior to conducting removal activities Site security will be established. Vehicle ingress/egress areas will be controlled with secured gates. Other obvious points, such as trails, of Site entry will be controlled as required. Areas adjacent to residences will be signed and controlled if necessary. Signs will be posted requiring all visitors to sign in with the Site manager. Site boundary signs will be posted warning potential visitors or trespassers of the Site contamination. Evidence of trespassing will be thoroughly investigated and action will be taken to prevent further trespassing.

All necessary permits will be obtained to conduct the removal action. Survey control points will be established to delineate property boundaries.

4.2 Staging Area

A temporary staging area (Figure 4) will be located onsite to store excavated soil and stage supplies needed to treat soils prior to disposal at an off-site facility. The staging area will consist of an outer soil berm and multiple subareas for soil storage and treatment activities and a loadout area for transportation to the landfill. Staging area details are provided in Figure 5.

Prior to use, the staging area will be fenced to provide security and lockable gates will provide access to the staging area. Trucks used to transport the contaminated soils to the

landfill will enter and leave the site on a clean road (see Figure 4). Prior to leaving the loadout all trucks will be inspected for visible contaminated soil on the tires or sides of the trucks. If the truck has contaminated soil on the outside or on its' tires the soil will be removed using hand tools. All trucks leaving the site with contaminated soil will have tarps covering the soil.

Best Management Practices (BMP's) will be used at the staging and all work areas to minimize the offsite migration of contaminated soils. Excavated wastes will be contained in the staging area. Berms and if necessary, tarps will be used to prevent wind blown migration of stockpiled waste. Tarps will be used when wetting with water is not sufficient to control off-site migration of contaminated soils. Ponded stormwater will be sampled and if found to be above applicable surface water standards it will be treated and properly disposed. Any such onsite treatment will comply with ARARs that address that particular activity.

4.2.1 Decontamination

All contaminated equipment will remain on the site until the removal action is completed. If for any reason (e.g., repairs or replacement) equipment must leave the site prior to completion of the work the equipment will be decontaminated. Decontamination procedures will include removal of visible contamination with hand tools (e.g., shovels, brooms, etc.) and if necessary with water. The decontamination area is located adjacent to the staging area (see Figure 4). The decontamination site will be constructed of clean 6 inch minus rock over contaminated soil. Equipment will enter the decontamination area from the south end and will exit onto the clean haul road on the north end. At the end of the removal action the gravel and underlying soils will be removed, treated if necessary and transported to the landfill with the final soils beneath the staging area.

Site workers will have HAZWOPER training certification and the HASP contains additional health and safety information to ensure that contaminated materials remain onsite until transportation to the approved landfill. Weekly health and safety meetings

will be conducted, by RMC personnel, to discuss worker exposures, offsite migration of wastes and general safety issues. A wash station will be setup near the decontamination area for workers to wash their hands, boots and/or remove work clothes before leaving the Site. Any coveralls or other clothing from the Site will be bagged and laundered at a commercial facility.

4.3 Pre Excavation Activities

Subsections under this section describe activities to be completed prior to onsite excavation.

4.3.1 Utility Line Locating

Prior to the commencement of work activities buried utilities will be located and marked. Blue Stakes of Utah will be contacted. If required non-participating and private utilities will be contacted.

4.3.2 Clearing and Grubbing

Vegetation, structures and constructed features that are in the planned excavation zones will be removed prior to the excavation.

Clearing and grubbing will include the removal of organic matter such as plants, trees and woody material as well as any other material from the Site. Large woody material will be segregated, tested for presence of contamination and if they are not contaminated disposed at a recycling facility, the materials may be chipped prior to disposal. Root balls and smaller woody debris will be tested and if contaminated will be disposed of at an appropriate landfill. Large non-organic materials such as boulders that interfere with grading will be removed from the areas as required. All materials will be sampled prior to leaving the Site, the field XRF will be used to determine if contamination is present on the materials. Every 10^{th} XRF sample will be split and analyzed by the laboratory for

quality control purposes. If the materials are contaminated they will be decontaminated and disposed of at an appropriate facility.

Any structures to be removed will be demolished and removed by a qualified contractor. Prior to disposal building debris material will be sampled for asbestos containing materials to determine an applicable disposal facility.

4.3.3 Remedial Zone Delineation

After completion of clearing and grubbing and prior to soil excavation, remedial zones (see Section 3.1) will be marked and delineated to facilitate the efficient removal of materials. Zone delineation will be based on the zones presented in Figure 2.

4.3.4 Cultural Resources

LCP commissioned two cultural resource investigations at the site as part of land use requirements by the Bureau of Land Management for the installation of an emergency water storage system. Appendix D contains the cultural resource reports. Results of the reports indicate that there are no significant historical sites within the excavation area. There are relatively few remnants of the Flagstaff smelter in the removal area mostly consisting of brick and other small debris. The State Historical Preservation Officer, Indian Tribes and State land management agencies will be sent a copy of this Workplan as notification of the removal action.

4.4 Soil Excavation

Excavation will be conducted with trackhoes, backhoes and other appropriate equipment. Equipment used will be dependent on the nature of the area and materials to be excavated. A water truck will be used to minimize airborne dust at the staging and excavation areas. Excavation work will be sequenced and coordinated to prevent recontamination of clean areas.

EXHIBIT 5
Work Plan

The excavation will continue until soil concentrations are below the RALs of 600 ppm and 126 ppm lead and arsenic, respectively as determined by portable field XRF meter. Ten percent of the XRF samples will be submitted for laboratory analyses as specified in the SAP in Appendix A. The total depth of excavation will be determined by XRF analysis of the final soil surface. A State of Utah certified laboratory will be used for the entire project.

During clearing and grubbing most if not all vegetation on the site will be removed. Large trees and brush will be removed and chipped for recycling. A composite sample, consisting of five subsamples, will be collected and submitted for laboratory analyses as specified in the SAP.

There will be no excavations made or excavated materials deposited into Little Cottonwood Creek or its wetlands. The only water body on the Site is a small pond. This is a seasonal water body as it is fed by a high water diversion from Little Cottonwood Creek.

There are two areas in Zone 1 that contain slopes with grades ranging from 30 to 75 percent slopes. These slopes contain contaminated material that will be removed. Soils on these slopes consist of a coarse grained sand/silt mixture with cobbles and large boulders. The soil type and the presence of cobbles and boulders prevent erosion from overland runoff. Prior to excavating contaminated material in these areas silt fence will be installed adjacent to Little Cottonwood Creek to prevent discharge of excavated or loose materials. A haul road will be constructed down these slopes to provide access for equipment and to haul contaminated material out of these areas. Contaminated soils will be removed in the haul road footprint and then the road will be constructed. After the level portions of these areas in Zone 1 are remediated the haul road and remaining contaminated soils will be removed. Final grade of the slopes will be reduced to 10 to 20 percent grades. During removal activities on the steep slopes excavation areas will be kept to a minimum to reduce the potential for erosion. After contaminated soils have

been removed in each steep slope area and the slopes laid back to a lesser grade, the slope will be contoured, mulch placed over the bare soils and silt fence installed at the bottom of the slopes. Disturbed areas that will not have roads or houses placed on them will be revegetated according to site reclamation procedures described in Section 4.6.

Excavated areas, with the exception of the steep slopes, will be rough graded to approximated original contour after removal of contaminated soils. A final grading plan for the development project has not been developed, when the grading plan is complete it will be submitted to EPA and DERR. Development grading and infrastructure installation will immediately follow completion of the removal action, weather permitting.

If contaminated soil is found at depths greater than anticipated the contaminated soil will be excavated and placed in the staging area for characterization and disposal. Contaminated soil at depths greater than anticipated are not expected at this Site. Even though that has been the case at the Davenport site. Contamination at depth at the Davenport site is likely due to importing soils and grading for development needs. The Davenport site was developed prior to removal of contaminated soils. There have not been significant grading activities at the Flagstaff Site as evidenced by smelter brick on the soil surface and other minor debris left over from the smelter. The level area in Zones 2 and 3 were part of tree farm at one time and may have been graded to a depth of 18 inches below grade as is consistent with general farming activities. These areas were sampled by EPA, DERR and RMC over the past 10 years and the depth profile of contaminated materials is sufficiently characterized. At-depth samples shall be collected at the request of DERR or EPA.

Characterization of excavated materials for treatment and disposal will be conducted on increments of 2,000 to 2,500 cyds. A composite sample consisting of 5 subsamples will be collected and submitted for total lead and arsenic and Toxic Characteristics Leaching Procedure (TCLP) results. All excavated material will be hauled to the staging area and placed in 2,000 to 2,500 cyd piles, the piles will be sampled and submitted for laboratory

analyses as described above. If a stockpile fails TCLP, that is if the leachable lead and arsenic concentrations exceed 5 ppm the pile will be treated with Tri-Sodium Phosphate (TSP) as described in Section 4.5.

4.4.1 Engineering Controls, Sampling and Monitoring

Engineering controls will be implemented to restrict transfer of contaminated soil and dust outside of work areas. The primary methods for achieving this objective will be the use of water for dust control and Best Management Practices (BMP's) for stormwater runoff controls.

Dust control measures will be based on visual observations and air monitoring data. The dust will be controlled with water trucks and hoses. Prior to leaving work areas, vehicle tires will be inspected and washed if necessary to prevent the offsite migration of contaminated soil. Dust suppression water will be from a local source and may be analyzed for metals prior to use. Water may be applied liberally, however care will be taken to prevent runoff from the Site and to prevent leachate from migrating into deeper soil. Measures will be taken to prevent runoff from leaving the excavation and staging areas.

BMP's such as berm construction, sediment fencing and runoff collection areas will be used as appropriate to prevent storm water and/or dust control water runoff. In areas where runoff is likely to occur (e.g. in areas adjacent to Little Cottonwood Creek) silt fencing will be installed and maintained until the contamination is removed.

Exposed stockpiles will wetted or covered with tarps if necessary.

Air monitoring will be conducted using portable sample collection pumps to determine lead and arsenic concentrations. Air monitoring will be conducted on a periodic basis. Pumps will be placed on excavation equipment as well as upwind and downwind from

the Site. The flow rate of each pump will be calibrated prior to use. The particulate filter sampling procedure and analysis is described in the SAP (Appendix A).

4.4.2 Soil Excavation Procedures

To facilitate the timely and efficient removal of soil and reduce analytical costs, a XRF will be used to analyze soils onsite during the removal process. A conservative value will be determined as a field screening level. This conservative approach insures that all contaminated soils are removed on the "first pass" and subsequent remediation is not required. To confirm the results of remediation, confirmation soil samples will be collected and analyzed by a laboratory Certified by the State of Utah.

Based on data collected by RMC during the Site Characterization a site specific correlation between on the ground XRF screening and laboratory analytical results was calculated. A trendline was plotted using eighteen samples collected by RMC. The samples plotted had laboratory lead concentrations from 29 to 830 ppm and XRF lead concentrations of 100 to 1000 ppm (Figure 6). The R^2 value of 0.8482 indicated that the trendline corresponds well to actual data. The slope equation for the data as presented in Figure 4 is:

$Y = 0.833x+23.247$

Where y = the laboratory concentration and

X = the XRF concentration

The RAL of 600 ppm lead assigned to the Y (laboratory value), results in an X (XRF value of) of 692 ppm. During excavation activities field XRF values of 600 ppm lead will be used as the screening value.

Soil will be excavated in six (6) and twelve (12) inch intervals depending on the requirements for each remedial zone. After the removal of each interval the ground will be screened with XRF. If the XRF determines that lead and arsenic concentrations are above the RALs additional soil will be removed. If the XRF determines that the soil surface meets RALs, a set of confirmation soil samples will be collected and analyzed.

Each zone will be divided into smaller sub-areas for confirmation sampling. Confirmation sampling is described in more detail in the SAP in Appendix A.

Confirmation sampling will be conducted on a 50 by 50 foot grid in Zone 1 and a 100 by 100 foot grid in Zones 2, 3 and 4 as specified in the SAP (Appendix A).

Large trees in the remedial area may be preserved during the removal action. Hand excavation will be conducted around the base of the trees. XRF screening will be conducted during the hand excavation to confirm that all contamination is removed.

4.5 Soil Treatment and Disposal

Soil treatment and disposal at the Site will be based on receiving facility requirements for lead and arsenic. All treatment and disposal decisions will be based on lead and arsenic concentrations. However, disposal facilities may require a more thorough suite of analyses prior to disposal. All contaminated materials will be transported to the ECDC/Allied Waste Wasatch Regional Landfill facility located on 2,000 acres on the west side of county road #128 approximately six miles north of interstate 80 in Tooele County, Utah. The facility is a permitted Class V Commercial Landfill, permit number 0501M.

Soil excavated from the Site will be segregated based on the need for treatment to meet disposal requirements. Segregated soils will be analyzed for total lead and arsenic as well as TCLP results. Soils exceeding the receiving facility TCLP criteria will be treated until they meet the specified criteria. Treatment will consist of mixing in TSP in the same manner as described in the USEPA work plan for OU1.

Prior to excavation an initial application of two percent (2%) Type I/II Tri Super Phosphate (TSP, 45 percent P_2O_5 by weight) will be placed on the ground surface. This initial surface application will expedite mixing. Prior to further treatment, to be conducted in the staging and treatment area, the soils may be screened to remove cobbles

and debris. The soil will be placed in treatment cells and amended with an initial application of TSP by volume. The TSP will be mixed into the soil with appropriate earthmoving equipment. Dust control measures will be identical to those detailed in Section 4.4.1.

After the TSP is mixed into the soil, samples will be collected and submitted to laboratory for TCLP lead and arsenic analysis. Sampling will be conducted in accordance with the SAP presented in Appendix A. While waiting for the laboratory results, the process will be repeated on a second cell. If the laboratory results indicate that the treatment is meeting requirements it will continue on additional cells. If the treated soils do not meet disposal requirements additional TSP will be applied to the original cell and blended and the soil will be resampled.

4.5.1 Transportation Plan

Contaminated materials will be transported using 36 cyd belly dump trucks with 30 cyd trailers. The trucks will enter and exit the Site off of State Highway 210 (Little Cottonwood Canyon Road) as shown on the Remedial Site Plan (Figure 4). The trucks will stay on an uncontaminated haul road throughout enter, loading and exiting the Site. All trucks will be inspected for visible signs of contamination prior to departing the Site. All contamination will be removed with brooms, shovels and/or water as required. The loading area will be tested daily for contaminated materials using the field XRF. Contaminated materials on the haul road will be picked up with hand tools or heavy equipment and placed back in the staging area. The trucks will be loaded well below the top of the dump bed to eliminate wind blown dust. The trucks have a total capacity of 66 cyds or 44 tons using a Proctor density of 1.5 tons/cyd. The trucks will be loaded "light" at approximately 38 tons to ensure that if stopped their loaded weight is below allowable limits (40 tons). Loading the trucks light will ensure that, during transport, wind blown dust is not a problem. Prior to leaving the Site the contaminated materials will be wetted down to further remove the potential for wind blown dust.

Hazard signs and flaggers will be used on Little Cottonwood Canyon Road to control traffic while the trucks are entering and exiting the Site. A truck crossing permit application has been filed with the State of Utah Department of Transportation.

4.6 Site Reclamation

Post removal grading and reclamation will be conducted as part of Site development. Development grading will occur after the completion of remedial activities. As part of LCP performing this work Site topography features may be modified to allow for Site development. No imported materials will be used during the removal action. Site development is funding this removal action. Existing and final grading profiles are presented in Figure 7.

If required for dust control prior to final Site development, temporary reclamation measures may be implemented. Temporary vegetation consisting of fast growing annual plants will be established in areas not undergoing immediate development. Site seed mixtures will include plants that are compatible with local climate and vegetative conditions. Dust suppression of unpaved roads and other areas may be conducted with magnesium chloride.

Areas not undergoing immediate development will be revegetated with a seed mixture to provide for short and long term erosion control and stability. The seed mix will include a mixture of deep-rooted annual and perennial native grass and forb species. The annual species will provide rapid germination to aid in short term revegetation. The short-term revegetation will decrease the runoff potential of the slope and will keep the imported soil in place. The perennial species will provide longer term, more stable revegetation.

5.0 PHYSICAL HAZARDS

A Site Health and Safety Plan (HASP) is contained in Appendix B. The HASP was developed in accordance with OHSA Standard 29 CFR Part 1910 and Part 1926.

All personnel directly involved with contaminated material, including subcontractor personnel, will have completed the 40-hour Hazardous Waste Operations (HAZWOPER) course required by OSHA. A Health and Safety Officer will monitor work activities and will have authority on all safety related issues. Site safety issues will be detailed in he HASP.

6.0 REFERENCES

ISSI Consulting Group (ISSI), 2001, Baseline Human Health Risk Assessment, Davenport and Flagstaff Smelter, Salt Lake Valley, Utah, Prepared for USEPA.

Resource Management Consultants, Inc., (RMC), 2004, Site Characterization Report – Little Cottonwood Canyon Property

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United States Environmental protection Agency (USEPA), 2002, Record of Decision (ROD), Operable Unit #1, Davenport and Flagstaff Smelters Superfund Site, Salt Lake County, Utah

EXHIBIT 5
Work Plan

URS Operating Services, Inc., July 8, 2005; Davenport and Flagstaff NPL Site Removal Action Plan, 2005 Removal Season Addendum. (Prepared for USEPA under START2 Contract No. 68-W-00-118)

EXHIBIT 5
Work Plan

Appendix A
RMC Sampling and Analysis Plan (SAP)

EXHIBIT 5
Work Plan

Appendix B
Health and Safety Plan

EXHIBIT 5
Work Plan

Appendix C
RMC Site Characterization Report

EXHIBIT 5
Work Plan

Appendix D
Cultural Resources